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ABSTRACT

This report describes part of the research conducted under Work Unit MODE, which examined methodological approaches in acquiring valid research data pertinent to critical social problems. It describes a study in which rates of nontherapeutic drug use obtained by a random urine screening program among Army personnel were compared with rates obtained by an anonymous self-report questionnaire. Procedural methodology in the urinalysis program was also examined. Questionnaire administration and urinalysis testing were conducted during the spring of 1973 on a sample of over 1,000 personnel assigned to five posts. The questionnaire was an inventory of drugs on which the subject indicated frequency of use during the previous three days. The field testing procedures in the urinalysis program were examined to determine variations in administration and to identify problems which could enable drug users to evade detection. As predicted, there was a discrepancy between the self-report rate of drug use and that found in urinalysis, with the self-report rate being much higher. Individual company commanders were particularly instrumental in determining the effectiveness of the urinalysis program. (Author)

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Technical Report 75-17

HumRRO-TR-75-17

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The Prevalence of Drug Abuse in the Army:

A Comparison of Urinalysis and Survey Rates

Joel M. Reaser, John A. Richards, and Steven L. Hartsock

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Approved for public release; distribution unlimited.

June 1975

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Prepared for

U.S. Army Research Institute for the Behavioral and Social Sciences
1300 Wilson Boulevard
Arlington, Virginia 22209

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This research project, conducted in the Spring of 1973, had two objectives: (a) to estimate the difference between rates of drug usage determined by the random urine testing currently in use by the Army and rates of usage found by use of an anonymous, self-report survey instrument; and (b) to examine the procedures being used in the field to implement random urine testing, in order to determine the variations in procedures and to observe the advantages

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and problems associated with each variation. As hypothesized from previous survey research, the self-report rate of drug use was much higher than that found from urine testing. There is reason to believe that the difference may at least in part be due to problems in implementing the program. Regardless of what procedures were used, there were means by which a potentially identifiable user could escape detection. The role of the individual unit commander was found to be crucial in determining the effectiveness of the system.

SUMMARY AND CONCLUSIONS

BACKGROUND

Ever since drug abuse was identified as a significant problem to the Army, making precise estimates of the prevalence of abuse has been a difficult task. At the outset, surveys were used as a primary source of population prevalence data.

During FY 1973, the services adopted random urinalysis screening. In addition to providing military population prevalence data, the program had three other purposes[1].

(1) To identify abusers
(2) To deter use
(3) To provide prevalence statistics

With the implementation of this program, the services began to rely on this system for estimates of the prevalence of drug abuse in the Army military population.

It was apparent immediately that there were substantial discrepancies between the rates obtained from the urine testing program and those gathered in anonymous survey efforts. A number of explanations for these discrepancies have been considered: First, the subjects usually realize that they cannot be tied to their responses; therefore some non-using individuals indicated use of drugs on anonymous surveys to thwart officials or because they wanted to feel that they were "in" with the group using drugs. Second, some surveys reported data on usage that were not (nor were they intended to be) comparable to urinalysis data because of the time frame of the questions asked. Surveys asking questions regarding use over the past year reported higher prevalence than the urinalysis procedure, which detects drugs used only during the past several days. Third, although the laboratory procedures used in the random urinalysis program were relatively accurate, the possibility existed that the administrative procedures used in its implementation allowed many users to escape detection.

The purpose of the research discussion in this report was to determine more precisely the extent of the discrepancy between urinalysis rates and survey rates to determine whether the third possibility, the administrative procedure involved, might account for the discrepancy.

The Problem

The military problem was the need to make accurate estimates of the prevalence of drug abuse so that the magnitude of the problem could be assessed. Since the urinalysis statistics came from a rigidly prescribed procedure, the Army and other services tended to rely on these data. However, as the data collection continued, other evidence persisted that drug use was far more prevalent than was indicated by the urinalysis figures. Some method was needed whereby the data gathered as part of the urinalysis program could be translated into more meaningful estimates of the extent of drug abuse.

The research problem was twofold. The first objective was to develop rates of use employing a survey which would be comparable with rates from the urinalysis program. In order to compare those rates to the urinalysis rates typically found from the urinalysis procedure, it was necessary that the research methodology used keep the urinalysis procedures intact and undisturbed. The second objective was to closely examine one explanation for discrepancies between the urinalysis and survey rates, that explanation being that individuals were evading detection because of problems in the administration

[1] Department of the Army Circular 600-84, *Drug Abuse Testing Program*, May 1972.

of the program; that is, the second research objective was to review the procedures themselves, determining where those procedures, as currently implemented, provided an opportunity for evasion.

It should be noted that, for the purposes of this study, neither rate was assumed to be a criterion. The determination of which rate reflects the more accurate estimate of the true prevalence rate was not a requirement of the study.

Survey Methodology

To achieve the urinalysis versus questionnaire comparison, several survey administration and questionnaire design variables that had produced data not properly comparable to urinalysis rates were eliminated or controlled, and the following survey procedures were adopted:

(1) Subjects were instructed to indicate on the questionnaire use of drugs over the previous three days only.

(2) Subjects taking the questionnaire were randomly chosen from the group selected by the existing procedures for urine testing. This ensured that the group answering the questionnaire and the group providing urine specimens were comparable.

(3) Questionnaires were individually reviewed by the research staff. Any questionnaires on which inordinate amounts of drugs were shown as being used were discarded. This procedure may have resulted in a conservative estimate of use from the survey but ensured that only those questionnaires thought to be appropriately completed were used in the computations.

(4) Each popularly abused drug was listed individually and identified by both street name(s) and pharmaceutical name.

(5) Only those substances which are detectable by the laboratory procedures currently contracted for by the Army were included in the data used to compute the survey drug abuse incidence rates.

(6) The questionnaire was an inventory of drugs on which the subject was asked to indicate the frequency of use during the previous three days. The amount of reading required was kept to an absolute minimum to permit even an individual of low literacy level to complete the questionnaire in about ten minutes. This was intended to minimize fatigue and boredom and to reduce the tendency to respond randomly or invalidly.

(7) In computing usage statistics, the same mutually exclusive categories used for reporting urinalysis data were used in reporting the survey data. Many past surveys have indicated use of each category of drug without identifying what percentage of users in each category were also included in one or more other categories. Data reported in such a way inflate the estimated total number of users or make it impossible to determine the total number of users. Subjects indicating use of more than one detectable barbiturate, amphetamine, or narcotic drug were reported as polydrug users.

During the administration of the questionnaire every effort was made by the research team, within limits of the available facilities at each post, to give the individuals as much privacy as possible. As the subjects answered the questionnaire, one member of the research team acted as monitor.

Five posts were selected for this study. They were chosen by the Army in keeping with their attempt to schedule this and other research projects at various installations.

The survey sample included over 1,000 personnel assigned to training, school combat ready, support, administrative, and overhead units in the spring of 1973.

Methodology for Procedural Analysis

In order to achieve the second objective of the study—the analysis of the operating procedures—the steps were as follows:

(1) The operating procedures were reviewed by the research team in interviews with the Alcohol and Drug Control Officer and others in key positions in the random urinalysis system at each post.

(2) Questions regarding each step of the procedure were asked to ensure a thorough understanding on the part of the research team and to identify potential problems in the procedures used at each post.

(3) During the five days of the study, the members of the research team personally observed the way in which each step in the process was conducted.

(4) The observations were compared with the intended implementation procedures. Two types of problems were identified: Those resulting from loopholes in the procedures and those resulting from less than rigorous fulfillment of the procedures.

PROCEDURE

The survey administration and urinalysis testing were conducted as follows. Individuals were selected for urine screening using the procedures normally followed at each post. (At three of the five posts visited, the sample drawn was doubled to ensure a sufficient subsample in both groups.) Individuals were notified of the test in accordance with standard urinalysis procedures at each post.

A list of those selected for urine screening was provided to the research team a day or so before testing. A member of the team randomly assigned those on the list to either a questionnaire or a urinalysis group. On the morning of the test, the list was given to the post's urine collection team. When lists were not available prior to the test day, random assignment was carried out by the research team as the men reported for testing.

Upon reporting to the urine collection site, individuals assigned to the survey group reported to the HumRRO staff member administering the survey. The administrator introduced himself and gave a brief explanation of the study and the task to be performed by the subject. The subject took a seat anywhere in the area, completed the questionnaire, and returned to his unit.

Individuals selected to complete the urinalysis test did so according to the procedures normally used at each post.

RESULTS

Rate Comparisons. The survey and urinalysis rates obtained for each of the five categories of detectable drugs are shown as percentages in the following listing.

Drug	Clinically Confirmed Urinalysis Rate	Illicit Use Survey Rate
Amphetamines	.1933	2.2556
Barbiturates	0	1.4098
Narcotics	.0976	.8459
Drug Combination (Polydrug)	0	1.6917
Total	.2909	6.2030

The survey rate for amphetamines is almost 12 times the urinalysis rate for that category of drugs. For narcotics, the survey rate is almost nine times that obtained from the urinalysis procedure. Since there were no clinically confirmed cases of barbiturate or polydrug users, similar comparisons cannot be made for these categories. Overall, the survey rate is more than 21 times the urinalysis rate. This figure may be inflated by the lack of clinically confirmed cases in the two drug categories.

Observations and Interviews. In addition to the survey, key staff members were interviewed regarding the implementation of the random testing procedures, and periodic observations were made of the testing procedures as they were performed.

The interviews were conducted by a member of the research staff using a predefined set of questions regarding various phases of procedure. A different set of questions was asked each person playing a key role in the system. Although the questions differed, the information gathered from one individual usually overlapped information from those in other key roles. In this way, a relatively complete and accurate picture of each step in the procedure was obtained.

These data were in turn verified by direct observations, which were conducted periodically and informally by one member and sometimes both members of the research team. The observations provided an additional source of data regarding the procedures as they were actually carried out, and allowed the research staff to identify discrepancies between conception and implementation, and to note the potential impact of these discrepancies on the effectiveness of the program.

Observations of the Implementation of Procedures. A systems analytic approach was used to define 10 processing steps involved in the urinalysis procedure. A flow chart of activities was charted and problems observed regarding each step in the procedure were identified. A summary of the administrative problems is as follows:

(1) Problems were encountered in determining the sample population to be tested—those considered to have the highest risk of drug involvement. Although testing was intended for men under age 29, some posts included men who were 29 years old, and one post sampled from the entire population regardless of age. Extension of the age group parameters lowers the usage rates for the posts involved, since illicit drug use has been found to be lower in older age groups.

A second problem in determining who is to be tested is associated with the problem of keeping accurate and timely records on other than permanent party personnel. Because there is a high turnover of trainee and attached personnel, and satellite/tenant activities personnel do not fall within the post chain of command, records on these individuals are not accurate. As a consequence their compliance with instructions to report for urine screening is more difficult. In some cases, posts have simply increased the daily quota among their permanent personnel to ensure that their overall quotas are met.

(2) Of the men surveyed, 97.1% indicated that they had been told of the test either on the same day or one to two days prior to testing. Just under 3% of the subjects were given or managed to take enough time between notification and testing to have largely eliminated detectable amounts of any illicitly used substances. The amount of advance notification given the units or individuals to be tested varied from post to post, and varied even more once the information had passed from the post level to the subordinate level command.

(3) Facilities where individuals were required to provide specimens differed at each post. In one case, a latrine had been equipped with large mirrors which enabled a monitor to observe personnel as they provided specimens. At another post, direct observation duty was assigned to an NCO in the unit being tested. Since these NCOs are not trained or acclimated to this type of duty, procedures were less than rigorously enforced. The problem is simply that watching individuals provide urine specimens is not a highly sought-after military job.

(4) Identification and control of "no-shows" was probably the largest single problem in the urinalysis program. No-shows are defined as those who are available for testing but fail to appear or those who appear but fail to provide a specimen. There are a number of problems even in this definition. One problem is defining who is available for testing. Is it those present for duty? Or is it those present for duty and not otherwise excused by the unit commander? Or is it all those carried on the morning report?

"No shows" are defined by each post separately and subsequently handled in different ways. In some cases all assigned personnel who, for whatever reason, fail to provide a specimen are put on a makeup list from which samples are drawn at some later date. In other cases an individual who is excused by his unit commander for any legitimate excuse (as defined by the unit commander) is not required to report at all.

A basic problem in controlling no-shows is not the procedures or the implementation of those procedures by the posts, but the support of unit commanders in ensuring that their men comply with instructions from the urinalysis team. Random urinalysis screening cannot work without the full support of commanders at all levels.

(5) For the sample used in this study, clinical evaluation procedures confirmed as a bona fide user one in six subjects with laboratory-positive urine specimens. As with other steps in the urinalysis procedure, prescribed procedures varied from post to post and the rigor with which they were followed depended largely on the individual conducting the procedure. Depending on the post, the individual responsible for the initial clinical interview was a physician, a paraprofessional social worker, or the unit commander. Likewise, depending upon the post, the procedure included eight weeks of surveillance testing[1] or a "rap session" to determine whether the individual involved had problems which were bothering him.

Supplemental Survey Data. A subsample of about 300 individuals were asked several additional questions regarding the urinalysis program. The questions were aimed at measuring the knowledge of the population in regards to the drugs detected by urinalysis and the deterrence effectiveness of the program. Just under 13% of the subsample correctly identified amphetamines, barbiturates, and narcotics as those drug categories detectable by urinalysis.

[1] The procedure of eight weeks of surveillance testing suffered from the same problems associated with the program as a whole. If follow-up of the individual was less than rigorous or if the individual's commander did not ensure that the individual reported for testing, the system was of little value.

To provide some measure of the deterrence effectiveness of the random urinalysis screening program, the question was asked, "Have you ever decided not to use drugs because you were afraid of being caught by a 'piss' test?" In response to this question 40% indicated they had never considered using drugs. Of the remaining 60% who had presumably at least considered using drugs, 19 out of 20 (53.08% of the subsample) indicated *No*; only 1 in 20 indicated *Yes*.

CONCLUSIONS

For the drugs for which ratios were calculated, the survey rate was about 10 times the urinalysis rate of drug abuse incidence. Given that extensive efforts were made to ensure that the questionnaire data provided valid and comparable results, and given that opportunities exist in the urinalysis procedure for users to evade detection, the survey rates resulting from this study are viewed as valid estimates of the rates obtained through the urinalysis procedure.

The following issues need to be more rigorously addressed to improve the random urinalysis screening procedures:

(1) Personnel accounting systems must include up-to-date information on all personnel for which an installation has testing responsibilities.

(2) All efforts should be made to ensure that personnel selected for testing should be required to provide samples on the date selected. Priority to complete the procedure should be given over other commitments if the program is to be effective.

(3) Standards for facilities for providing specimens should be developed, and sufficiently trained, permanently assigned personnel should be provided to staff the urine collection team.

(4) Guidelines regarding "no-shows" should be established to:

- (a) Define acceptable reasons for "no-show."
- (b) Define categories of "no-shows" and appropriate follow-up action in each category.

(5) Commanders at all levels should be advised of their responsibilities regarding support of the program. They should understand the impact of their support on the success of the program and the need to insure that:

- (a) Selected personnel report and provide specimens on the date selected.
- (b) Laboratory-positive individuals report for clinical evaluation.
- (c) Personnel required to undergo eight-week surveillance testing do so meticulously.
- (d) Appropriate administrative actions be taken on individuals failing to comply.

(6) Clinical confirmation procedures should be standardized and the necessary medical or other professional personnel should be made available to support the program.

The purpose of this study was not to evaluate the program, but observations made regarding administration of the program raise the question of whether the program is achieving its intended objectives. The program is identifying only a small percentage of potentially identifiable users; only about 5% of those who have considered using drugs (three out of five people suggest that they have at least considered it) considered

urinalysis as having a deterrent value; incidence data resulting from urinalysis represent only a small fraction of the estimated incidence of abuse.

The more important question is whether the program is really workable. The program requires a trained team, disruption of training and other unit priorities, tight accounting of individuals, and complete support of commanders. Overall program effectiveness suffers when any one of these is missing. Given these considerations, a command-directed program may be more viable than random testing.

PREFACE

This study was one of several conducted under Work Unit MODE which had the general purpose of studying various methods for acquiring valid research data pertinent to critical social problems. The purpose of this study was to compare data on drug use collected as part of the random urine screening program that was conducted by the Army with data collected on a survey of drug use. In connection with the field data collection, the procedures used in implementing the urine testing system were examined.

This research was conducted by the Human Resources Research Organization, Eastern Division, Alexandria, Virginia, formerly Division No. 7 (Social Science). Work Unit MODE, Methodology of Studying Drug Usage in Military Settings, was initiated in January 1971. Work Unit MODE was sponsored by the U.S. Army Research Office, Research Directorate, Behavioral Science Office.

The Division Director during the earlier part of the study was Dr. Arthur J. Hoehn; Dr. Robert G. Smith was the Director during the latter part of the study. The present Director is Dr. Daniel J. Lyons. The principal investigator for this study was Dr. Joel M. Reaser. The research administrator for the project was Mr. John A. Richards, and the research assistant for the study was Pvt. Steven L. Hartsock. Work Unit MODE was directed by Dr. George H. Brown.

Appreciation is expressed to Major Arthur Bair for his assistance in the early stages of the project and for his help in making arrangements for the data collection. Appreciation is also expressed to the U.S. Continental Army Command, to the post commanders who provided the personnel necessary to conduct the study, and to the project officers whose assistance was essential to the work being performed. Finally, appreciation is expressed to the participants in the study.

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Meredith P. Crawford
President
Human Resources Research Organization

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The Prevalence of Drug Abuse in the Army:

A Comparison of Urinalysis and Survey Rates

Chapter 1

INTRODUCTION

The research effort described in this report had two purposes: (a) to compare levels of drug abuse determined by the random urinalysis procedure that was used by the Army with levels of abuse reported by individuals on an anonymous self-report survey of drug use; and (b) to review the design and implementation of the administrative procedures used in conducting the urinalysis program to identify possible problems that could result in successful evasion by users and thereby account in part for the discrepancy between the rates as reported in previous studies.

THE MILITARY PROBLEM

The basis for this research is the fundamental question of the extent of drug abuse in the Army. Over the past several years there have been two primary sources for determining population drug abuse prevalence rates: random urinalysis screening and questionnaire surveys, mostly of the anonymous, self-report variety. The statistics accumulating from these two sources have consistently shown that the rates obtained through surveys were much higher than the urinalysis rates. Since the expenditure of millions of dollars in terms of personnel time and supporting contracts depends on the estimates of the magnitude of the problem, valid data on prevalence are a crucial need.

Initially, the explanation for this difference was that the survey and urinalysis results were not comparable. Surveys were oriented toward identifying use of drugs over a long period or an unspecified recent period, and were carried out at different times on samples of individuals not necessarily comparable to the urine testing samples. Surveys also gathered data on undetectable as well as detectable drugs. Urinalysis, however, was used to identify particular individuals who had used a specific amphetamine, barbiturate, or narcotic drug during a specific time period.

However, more recent surveys directed at getting information on the use of detectable drugs during the detectable period have shown substantially higher rates than those detected by urinalysis. The discrepancies have continued in spite of improved laboratory processing of urine specimens and the design of more highly controlled and standardized specimen retrieval procedures.

The problem, then, is which set of results does one accept—the survey results or the urinalysis results. The objective of this research was not to define which was the more accurate approximation of the incidence of abuse, but rather to provide an estimate of the difference to be expected between the obtained rates. However, review of the procedures used in administering the program was intended to provide some additional information regarding which technique provided the better estimates of true incidence.

THE RESEARCH PROBLEM

The research problems defined from the questions arising from the military problem were to provide comparable drug abuse statistics, urinalysis versus survey, for similar

groups of individuals, over the same detectable time period, on the same detectable drugs. The objective was to determine the ratio between urinalysis and survey rates holding constant the sample, time period, and drug type variables that were suspected of partially accounting for the differences in rates. A supplemental objective was to account, in a less controlled manner, for procedural variables (e.g., follow up of "no-shows", or clinical confirmation procedures) that may result in variance in the rates of abuse obtained by the two methods. Although other significant variables, such as laboratory reliability, also presumably contribute to differences in the survey and urinalysis rates, the focus of attention in this study was the administrative procedures used in the program.

BACKGROUND

Surveys of drug usage have consistently shown rates of abuse higher than those reported from urinalysis. However, the rates from surveys vary depending on a number of factors. The primary reason for the variation is that different questionnaires ask somewhat different questions. For example, questions asked to determine drug abuse incidence have included:

"How frequently are you now using drugs?"
"Have you ever used drug X?"
"How many times have you used drug Y during the past year?"

Rates developed from any of these questions will be higher than would be expected from urinalysis, since the latter detects usage only during the previous 72 hours.

A second reason for variations in reported rates is the way in which the statistics on usage are reported. A prevalent method is to present the percentages of abuse for each drug separately, without taking into account the fact that any individual reporting use of drug X also may have reported use of drug Y. That is, usage data are not usually presented in mutually exclusive categories; thus there is no way for the reader of such statistics to know how many people are using each drug separately and how many are using several of the drugs in combination.

In order to provide a context in which the data gathered from this study can be interpreted, the results of a number of previous surveys are reviewed below. An attempt has been made to group these previous studies on the basis of whether statistics from the studies are provided for mutually exclusive categories and whether the questions asked in the survey provided data that might be considered comparable to urinalysis data.

NON-MUTUALLY EXCLUSIVE CATEGORIES

Study A. *A Comparison of Methods of Studying Illicit Drug Usage* (Brown and Harding, 1)

Three different methods of eliciting sensitive information about drug use among individuals in the Army are compared in this study.

Method I—the anonymous questionnaire
Method II—the anonymous Randomized Inquiry (RI) questionnaire
Method III—the card sort technique.

Reported drug usage was based upon use during the past month and categories were non-mutually exclusive. The card sort technique was used to measure attitudes toward drug abuse rather than actual usage rates. Only the first two techniques will be discussed here.

The questionnaire was an anonymous survey which included demographic items as well as drug usage questions. Also, it contained a 30-item personality inventory which

included a lie scale. The sample consisted of 663 enlisted men, 63 noncommissioned officers, and 320 officers. The sample was not necessarily representative of the entire Army population because the study was primarily concerned with methodological applications of the following methods.

The Randomized Inquiry technique (Simmons, 2) gave the subject added security from identification by allowing him to select, by chance, one of a pair of questions with no one except the subject knowing which question he selected. One question dealt with drug abuse, the other asked some innocuous query. The data from this procedure were statistically converted to provide the proportion of individuals selecting the drug-related question and to estimate the number of individuals using drugs.

As shown in Table 1, the conventional questionnaire and Randomized Inquiry (RI) technique produced similar results in all drug categories for enlisted men except one. For barbiturates, 10% of enlisted men indicated use on the questionnaire as opposed to 17% who indicated use on the RI instrument. For the officers, the RI technique produced significantly higher results in three different areas:

Marijuana—conventional questionnaire, 5%; to RI, 9%
Psychedelics—conventional questionnaire, 2%; to RI, 12%
Amphetamines—conventional questionnaire, 2%; to RI, 8%.

Study B. *Drug Usage Rates As Related to Method of Data Acquisition* (Brown, 3)

Similar to the previous study in its goal to find adequate methods of achieving truthful and meaningful responses on sensitive topics, the second phase of MODE showed the results of questionnaires compared with those of interviews. The questionnaires included items regarding use of all categories of drugs.

The interview was conducted in a small office with as much informality as possible. The individual being interviewed was given a letter from the Department of Justice guaranteeing that the information which he was about to provide was "privileged information," relieving him of the fear that the information could be used against him as indicting evidence.

Although there were differences between the rates determined from each of the techniques, the differences were not statistically significant. Therefore, it was concluded that the data from the questionnaire approach were comparable to the data from the confidential interviews.

Study C. *Randomized Inquiry vs. Conventional Questionnaire Method in Estimating Drug Rates Through Mail Surveys* (Brown, 4)

This study was a mail-out survey conducted as part of Work Unit MODE; questionnaires in card form were mailed out to 2,000 individuals, both officers and enlisted men.

Questionnaires were of two types: conventional questionnaire format and Randomized Inquiry format similar to that discussed under Study A.

The questions concerned the use of drugs during the past three days and concerned the use of marijuana, psychedelics, amphetamines, barbiturates, and narcotics.

As shown in Table 1, drug utilization rates for enlisted men using psychedelics, amphetamines, and barbiturates reportedly was 6.7, 2.9, and 8.3, respectively. Narcotic use for the enlisted men's group was reported for 3.6% of the total population. These rates are overall rates using data from both questionnaire types.

Drug usage rates for officers, as shown in Table 1, indicated 4.4% reported use of marijuana and 0.9% reported use of psychedelics within the past three days. Reported amphetamine and barbiturate use by officers was 1.6 and 0.7%, respectively. Narcotic use was reported to be 0.5%.

Table 1

Summary of Results of Surveys on Drug Abuse in the Army

Project	Study	Year	Type of Drug[a]							Prevalence Period[c]
			M	P	A	B	N	Comb.[b]	Other	
NON-MUTUALLY EXCLUSIVE CATEGORIES[d]										
MODE										
Conv. Questionnaire	A	1973								
Officers			5	2	2	6	5	--	--	Past month
Enlisted Men			39	17	16	10	3	--	--	Past month
Randomized Inquiry	A									
Officers			9	12	8	8	5	--	--	Past month
Enlisted Men			39	17	16	17	4	--	--	Past month
Data Acquisition	B	1973								
Questionnaire			34	10	14	9	3		--	Current use
Interview			34	7	7	2	4		--	Current use
MODE I	C	1973								
Officers			4.4	.9	1.6	.7	.5	--	--	Past 3 days
Enlisted Men			31.2	6.7	2.9	8.3	3.6	--	--	Past 3 days
DELTA I	D	1973	42.7	29.4	28.0	20.4	20.1	--	--	12 months
PREVENT	E	1973	27.9	15.4	16.7	14.1	12.6	--	--	12 months
MUTUALLY EXCLUSIVE CATEGORIES[e]										
POST-DELTA	F	1972	6.1	4.1	6.1	1.6	.9	22.6[g]	--	Current use
DELTA TWO	G	1973	2.8	9.3	6.0	.9	3.9	23.3[h]	-	12 months
DAMMS	H	1972								
Urinalysis			--	--	1.27	1.10	.17	0.00	.00	Past 3 days
Survey			--	--	5.69	1.61	.80	3.43	.44	Past 3 days
ROBINS (General Sample)	I	1973								
Urinalysis			--	--	10	2	.7	--	--	Current use
Interview			--	--	5	2	2	--	--	Current use
MODE II[f]		1973								
Urinalysis			--	--	.19	0	.14	0	--	Past 3 days
Survey			17.5	1.8	2.26	1.41	.84	1.69	--	Past 3 days

[a]M=Marijuana, P=Psychedelics, A=Amphetamines, B=Barbiturates, N=Narcotics

[b]Drug combinations are AB, AN, BN, and ABN.

[c]Period of time within which a person using any amount of a drug any number of times is considered a user.

[d]Non-mutually-exclusive categories: The same individual may be reported under more than one drug.

[e]Mutually exclusive categories: A given individual is reported under only one category.

[f]Project name of study being reported in this paper.

[g]Includes 13.2% who indicated use of all possible categories of drugs, and therefore of questionable accuracy.

[h]Includes 12.7% who indicated use of all possible categories of drugs, and therefore of questionable accuracy.

Study D. *Preliminary Findings from the 1971 DoD Survey of Drug Use* (Fisher, 5)

The 1971 Project DELTA[1] used an anonymous questionnaire consisting of 73 items and was administered to 36,500 military personnel from all the military services. Drug categories included marijuana, other psychedelics, stimulants, amphetamines, depressants, barbiturates, and narcotic drugs. Measurement of drug use was done in both frequency within the previous 12-month period and average current use. A stratified sampling plan was developed to provide information so that inferences could be drawn on the entire Armed Services population. As seen in Table 1, for the past 12 months non-mutually-exclusive categories of drug usage for the Army showed that 42.7% of the soldiers had used marijuana, while use of psychedelics and amphetamines was reported as 29.4% and 28.0%, respectively. Narcotic drugs were used by 20.1% of the subject group.

Study E. *Educational Approaches to the Prevention of Nontherapeutic Use of Drugs* (Kriner *et al.*, 6)

In Project PREVENT, 2,149 members of sample group were specifically selected to represent the Army in general with respect to rank, age, education, and time in service. This included groups of special interest such as personnel in the stockade. Individuals were placed into nine different groups, from personnel in the stockade to field grade officers, which represented their particular backgrounds. Information was elicited by a 260-item questionnaire which surveyed attitudes toward drug use, and provided demographic and other information.

Drug usage rates of this project were based on a 12-month period and covered all ages. Use of psychedelics, amphetamines, barbiturates, and narcotics fell within a range from a high of 15.4% for psychedelics to a 12.6% rating for narcotics.

MUTUALLY EXCLUSIVE CATEGORIES

Study F. *Additional Data Analysis in Support of the 1972 DoD Survey*[2]

This Post-DELTA study further analyzed the 1971 DELTA data. The study included data on Army CONUS current use; the use of marijuana and psychedelics was 6.1% and 4.1%, respectively. For the drugs which are detectable by urinalysis, amphetamines were found to be 6.1% and barbiturates were 1.6%. Narcotics showed a .9% usage rate.

Study G. *Replication of the DoD Survey of Drug Use*

DELTA TWO was a worldwide project involving all military services. Random oversampling was done to ensure that sampling requirements would be met. Enlisted personnel in grades E1 through E9 were members of the sampling group. The sample included 49,804 usable answer sheets. The DELTA TWO questionnaire of 105 items was revised from the DELTA 1971 DoD Survey and included items on urinalysis effectiveness and attitudes of individuals toward the program.

[1] The DELTA projects are another series of drug surveys that give indication of drug use and include information on the urinalysis programs. DELTA is large relative to other projects mentioned here in that sample populations of 30,000 to 40,000 were selected from posts throughout the world. These surveys have been conducted annually for the last two years. The results of each survey are presented separately.

[2] Analyses conducted by Allan H. Fisher, Jr. and Joel M. Reaser in research performed by HumRRO during 1972.

Drug usage data is presented for mutually exclusive categories in Table 1. Reported marijuana use is 8.8% and psychedelics use, including hashish, is 9.3% of the sample. Amphetamines and barbiturates were used by 6.0% and 0.9% of all respondents, respectively. Use of narcotics was indicated by 3.9% of the entire sample. DELTA TWO also queried the use of combinations of drugs, which yielded a usage rate of 23.4% of the sample. (See Table 1, footnote h.)

Study H. *Drug Abuse and Morale Monitoring Survey, Report No. 3* (Rohrbaugh, 7)

This study was conducted at Fort Riley, Kansas. Test units were selected randomly for a survey of drug use. The sample consisted of 13,680 individuals—12.2% of the total troop population.

A second post-wide sample was selected to receive unannounced urine testing in the week following the DAMMS survey. The sample drawn for urine testing was chosen to match the units of the survey as nearly as possible.

The unit commanders were not notified until the afternoon of the actual urine collection. Urinalysis procedures were adhered to without exception, and supervised by personnel specifically trained for urinalysis testing. All personnel were tested except for those on TDY or leave. All individuals with unauthorized positives were interviewed by the drug center staff members or dispensary physician.

Amphetamine use was reported by 5.69% of the population and barbiturate use was reported by 1.61%, whereas urinalysis produced only 1.27% amphetamine use and 1.10% barbiturate use. Furthermore, the DAMMS survey showed use of a combination of drugs by 3.43%, as opposed to 0.00% for the urinalysis method.

Drug usage questions on the survey were concerned with "the past three days" to provide rates comparable with those which might be expected from urinalysis. Differences between the survey and urinalysis were largely attributed to laboratory processing errors. Overall the survey rate was 4.7 times greater than the urinalysis rate. Note that the urinalysis was a command directed and supported operation, conducted prior to the full implementation of random urine screening.

Study I. *A Follow-Up of Vietnam Drug Users* (Robins, 8)

This study was conducted in cooperation with the Department of Defense, the Department of Labor, the National Institutes of Mental Health, and the Veterans Administration. The purpose of this project was to determine the extent of drug use for Army enlisted personnel while in Vietnam and drug habits which they continued after returning to the United States.

Both interview and urinalysis methods were used to determine drug use. The sample population consisted of individuals who departed from Vietnam in September 1971 (a period when heroin use was thought to be at its highest). Each person selected was personally interviewed and subsequently asked to provide a urine specimen. All subjects were assured of complete anonymity. Army records were checked to validate and supplement the interview data.

The interview was structured to determine the number of men who have used drugs since returning from Vietnam and those who used drugs while in Vietnam.

The subjects were interviewed by trained members of the staff of the National Opinion Research Center of the University of Chicago. Each interview was private and lasted an average of one hour and 40 minutes. Interviewers were of all races and both sexes; most were young. Puerto Rican subjects were interviewed by Puerto Ricans in Spanish.

Subsequent to the interview, subjects were requested to voluntarily provide urine specimens. Urine specimens were sent airmail to the Addiction Research Foundation in

Toronto, Canada, where urinalysis was performed under the direction of Dr. B.M. Kapur, Director of Laboratories. The urinalysis procedure was the same as that used by Army laboratories. Barbiturates, morphine, codeine, quinine, and methadone were screened by three-layer chromatography (TLC), and positive morphines were confirmed by use of gas liquid chromotography (GLC). All amphetamines and metha-amphetamines were screened by GLC.

The study included a general sample of individuals (N=451), and a drug positive group–those who were found positive in Vietnam (N=469). The comparative results between the interviews and urinalysis show drug usage rates for amphetamines, barbiturates, and narcotics to be 10, 2, and 0.7%, respectively, for the general sample urinalysis group (see Tables 1 and 2), while the interviews reported 5, 2, and 2% for the same respective drug groups (See Table 2).

Table 2

Percentage of Drug Users Found in Study I[a] Drug Survey

Type of Drug	General Sample		Drug Positives	
	Current Use (N=451) Urinalysis	Current Heavy Use (N=451) Interview	Current Use (N=469) Urinalysis	Any Use (N=469) Interview
Amphetamines	10	5	10	8
Barbiturates	2	2	6	6
Narcotics	.7	2	2	8

[a]From Tables 6 and 7 in Robins (8).

Drug use for those who were found to be drug positive in Vietnam was reported to be currently slightly higher than for the general sample, except for amphetamines. Drug use according to urinalysis was 10, 6, and 2%, respectively, for amphetamines, barbiturates, and narcotics, while the interviews reported 8, 6, and 8% drug use for the same respective categories.

SUMMARY

There are several points made in reviewing the studies just described. First, survey methodology (e.g., length of prevalence period) has varied from study to study and such differences result in differing estimates of prevalence. Second, a major distinction between studies should be made on the basis of whether prevalence was or is not reported for mutually exclusive groups. Third, when mutually exclusive groups were defined, with only one exception (the Robins study, 8)[1] urinalysis rates were a fraction of the interview or survey rates. The final point is that no study has been conducted directly comparing the prevalence estimates derived from the currently implemented random testing program with estimates from a summary.

[1]It is noted that in the Robins study, the urinalysis procedure was much more tightly controlled than the random testing procedures were found to be. Accordingly, the rates were much higher than have been reported from random testing.

Chapter 2

METHODOLOGY

The methodology for this study was developed to provide an accurate comparison of Army drug usage rates from urinalysis results with those derived from an anonymous, self-report survey questionnaire. For five days in the Spring of 1973, each installation selected to participate in the study was asked to draw, by whatever process was routinely employed, twice the number of people normally drawn for urinalysis.[1] As subjects reported to the urine collection site, they were randomly assigned either to go through the normal urinalysis procedure or to take a brief 10-minute questionnaire.

Two HumRRO researchers were on site to perform the random assignment of the subjects, administer the questionnaire, conduct interviews with key staff members, and observe the urinalysis procedure. The interviews were structured so that they would provide the most complete information in the least amount of time. This elicited information covered post policy in regard to each aspect of the urinalysis program, that is, sample drawing, testing procedure, and evaluation.

DATA COLLECTION SITES

Installations were selected for this study by the Army's Alcohol and Drug Abuse Policy Office with the concurrence of the U.S. Continental Army Command (CONARC).

Five posts were selected for this study. The posts were chosen by the Army in keeping with their attempts to schedule this and other research projects at various installations. The posts varied in overall strength from 7,000 to over 20,000 and the sample included personnel assigned to training, school combat ready, support, administrative, and overhead units.

SAMPLE DESCRIPTION

The methodology employed in this study did not manipulate the sample gathered by the selection processes used at each post. It was assumed that the samples drawn by the normal selection process would be typical of the Army in regard to pay grade, educational level, race, and age.

It should be noted that the results of the study are not contingent upon the sample being representative of the Army as a whole, although this is assumed. It was necessary only that the two groups completing the survey and the group providing the specimens be similar. (Demographics of the sample are given in Appendix A.)

[1] One installation proved to be an exception. Due to their large daily quota they drew their regular urinalysis sample and randomly divided it into two groups—one for the survey and one for urine testing.

DRUG USE QUESTIONNAIRE

The survey instrument (see Appendix B) was a five-page, 41-item questionnaire. It was organized with 34 drug and alcohol use items, five demographic items, and two questions about the urinalysis program. The drug items asked for the number of times each substance had been taken during the three days prior to the questionnaire administration. The three-day time frame was selected because most of the drugs for which the Army is currently testing remain in the system, in detectable amounts, for approximately 72 hours (this varies, of course, depending on the type and purity of the drug, the dose taken, the individual's weight, and the efficiency of the laboratory procedure). Thus, persons who indicated on the questionnaire that they had used detectable drugs would, theoretically, have been laboratory positives had they taken the urine test.

The questionnaire provided a simple checklist of drugs by drug type, instructing the individual to indicate the amount of use of each drug or type of drug listed. It also provided a block for indicating that the drug was used for prescribed medical purposes if such was the case. The frequency of response for each drug item is presented in tabular form in Appendix C.

In addition to the 34 drug/drug-type usage items, basic demographics were elicited (i.e., age, pay grade, education, race, and years of service). Furthermore, individuals were asked how far in advance they had been notified that they were to be tested, their attitudes toward the program, and whether they had ever tried to avoid detection by urinalysis.

The questionnaire was designed to gather all the essential data in as brief a time as possible. One objective was to have the average man complete the questionnaire in about the same amount of time as was needed to be processed through the urine testing facility. This goal was accomplished.

Both in the written instructions and in the brief remarks given when the individual or group was presented with the questionnaire, it was emphasized that the survey was being conducted by a civilian research company and that the questionnaire was to be completed anonymously.

Supplemental Questions

Following completion of the questionnaire, general supplementary questions (Appendix D) were asked of a subsample of those in the study. The individual was asked which drugs were detectable by urinalysis and whether the subject perceived the urinalysis test as a deterrent to his using drugs. The first question was asked to estimate the level of knowledge of the target population regarding urinalysis. The second question was asked to get an estimation of the effectiveness of urinalysis in its objective of deterring use among the military. Responses to these questions are provided in the Results section.

Urinalysis Statistics Data Collection Form

In order to collect the urinalysis rates for the groups which completed that procedure a collection form was provided by the research staff. This form is seen in Appendix E.

SURVEY PROCEDURE

The *primary objective* of this research was the comparison of abuse rates derived from two different techniques for similar groups, over the same time period, for the same

drug types. In considering alternative methodologies, two factors were taken into account:

(1) The extant procedures had to remain intact with as little disruption as possible. This was necessary since it was intended to compare survey rates with rates comparable to those usually expected from currently implemented procedures.

(2) The sampling procedure used to draw the sample completing the self-report inventory of drug use had to ensure a sample which could be assumed to be comparable to the sample which was to provide urine specimens.

Considering these elements, no changes were made to the existing procedure used by the post to select urinalysis samples. For the posts with small daily quotas (i.e., quotas less than 100 per day), twice the number of subjects were drawn in the sample; otherwise the sampling procedures implemented at the posts included in the study remained unchanged. No changes were made in any other step in the urine testing method up to the point where the individual reported to provide a urine specimen. At that time he was told either to continue the normal urine sampling procedure or to proceed to an adjacent site to complete a questionnaire survey. As previously discussed, individuals were divided into the survey and urinalysis groups on the basis of random designation by the last digit in the social security number. Administration of the survey was carried out by HumRRO personnel.

In summary, data were collected for five consecutive work days (Monday through Friday) at each of the five study locations. One HumRRO researcher and one Army enlisted research assistant comprised the data collection team. The data collection procedures were designed to meet the research requirements while causing a minimum of interference with the routine urine collection schedule. As already described, sampling was accomplished through whatever procedure was customarily used to select individuals for urine testing. Notification of subjects was carried out as usual. Subjects were split into the two treatment groups when they reported for urinalysis. The urinalysis group was then processed as usual. Subjects assigned to the questionnaire group were taken to an area nearby where they were given the survey questionnaire. (See Figure 1 for a diagram of the procedure flow.)

The questionnaire was administered by one of the members of the HumRRO research team. In order to minimize the possible inhibiting factors, the questionnaire was anonymous; it was administered in a private room with no military personnel other than the subjects present, and when possible, they were positioned with one empty seat between individuals. (If physical space was limited, the questionnaire group was administered to two separate but smaller groups.)

The administrator introduced the questionnaire in the following manner: "My name is_____. Today, instead of providing a urine specimen, we are asking you to complete this questionnaire on drug and alcohol use during the past three days. This survey is being conducted by a civilian research agency, called HumRRO, Human Resources Research Organization. No one in the Army will see these questionnaires. Do not put your name or any other identifying information on the questionnaire (this was emphasized). Take a seat anywhere, but try to keep at least one chair between you (if appropriate for the location). If you have any questions, let me know." The questionnaire took about 10 to 15 minutes to complete; the subjects were usually free to report to their duty stations no later than they would have had they taken the urine test.

METHODOLOGY FOR THE PROCEDURAL ANALYSIS

The *second objective* of this research was to identify procedural problems that might account for discrepancies between questionnaire and urinalysis rates. There were two aspects to be addressed: Program conceptualization and program implementation.

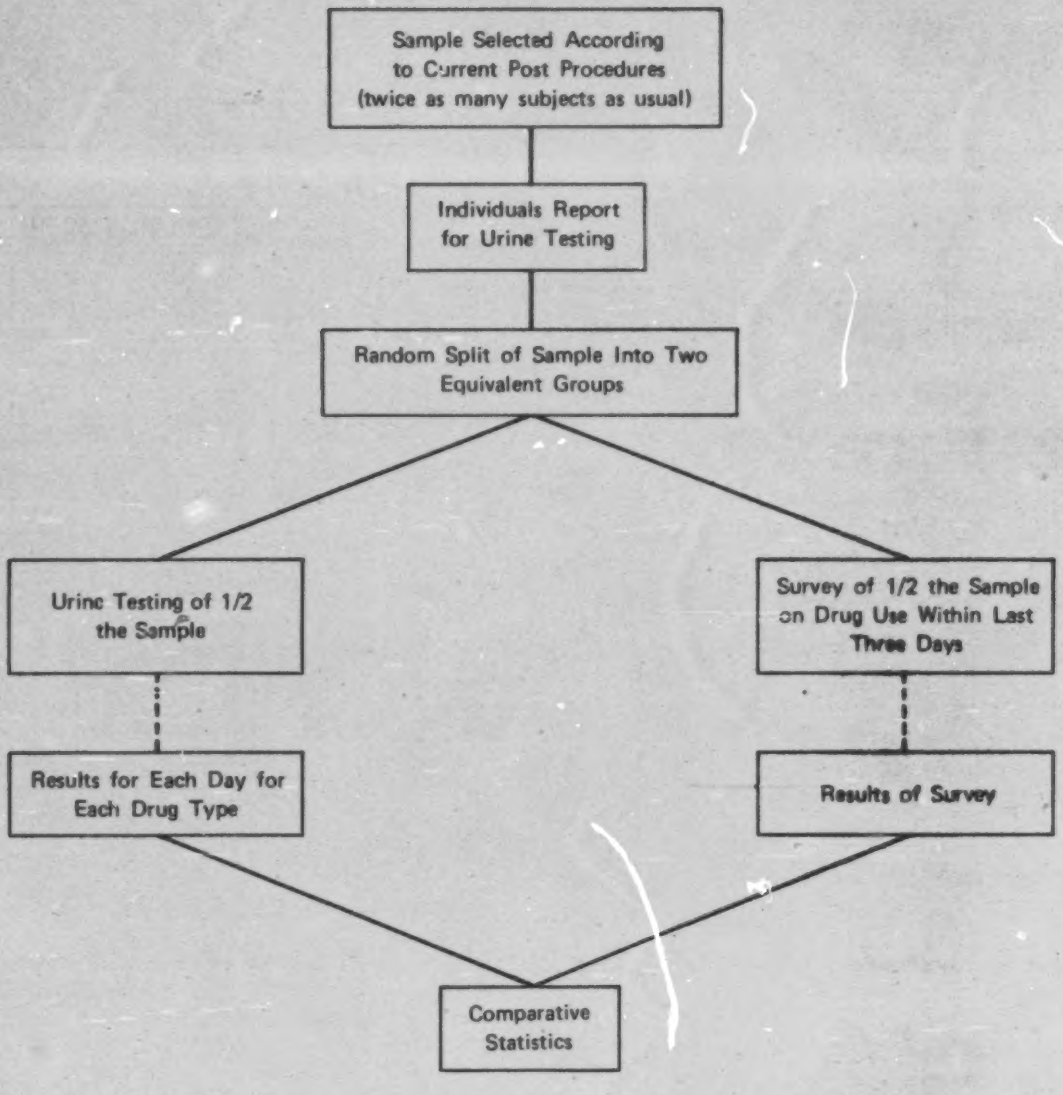

Sample Selected According to Current Post Procedures (twice as many subjects as usual)
Individuals Report for Urine Testing
Random Split of Sample Into Two Equivalent Groups
Urine Testing of 1/2 the Sample
Survey of 1/2 the Sample on Drug Use Within Last Three Days
Results for Each Day for Each Drug Type
Results of Survey
Comparative Statistics

Figure 1. **Procedure Flow Chart**

Conceptualization. Procedures varied at each of the posts. For example, some required selected individuals to report to a central urine collection facility, while others used mobile teams to conduct the procedure at the unit's location.

Posts also varied on qualifications of the team members (medical MOS personnel versus personnel assigned to the post who are excess in their primary MOS); there were also differences in qualifications of those who conducted the initial clinical evaluation of differences in sampling procedures and so on.

Implementation. In addition to learning the various strategies for implementing random urine screening at various posts, it was also necessary to observe the degree to which each strategy was carried out.

In order to determine the conceptualization and implementation at each post, data were gathered by observations of the procedures and by a series of interviews with key personnel. While one member of the research team was administering the questionnaire, the other was periodically and informally observing the urine collection procedure to observe whether the procedures went "by-the-book" and what variations were made to accommodate the "real world."

Another activity designed to provide interpretive information was the conduct of interviews with key individuals in the urine screening program (see Appendix F for a copy of the interview guide). Those interviewed were the Post Alcohol and Drug Control Officer or his assistant, the individual who actually draws the daily urinalysis sample, the officer or NCO with direct responsibility for urine testing, and the psychiatrist or other person who conducts the clinical evaluations. These interviews were usually about 15-30 minutes in length and were aimed at providing information to complete the field team's understanding of the urine testing program in total.

SURVEY DATA PREPARATION

Questionnaires were completed by 1,070 subjects. The questionnaires were manually scanned and responses to the open-ended questions coded for analysis.[1] All the questionnaires were reviewed for inappropriate, illogical, or erroneous responses prior to their being submitted for computer processing. Eleven questionnaires were eliminated because in each case the respondent indicated too much use of too many drugs, because remarks made in answer to the open-ended questions indicated intentional falsification of the responses to the items, or because of other indications of obvious lying on the questionnaire.

This procedure reduced the total number of users by 8, or 11%, of the 74 who had indicated use of detectable drugs. All of the results are based on the more conservative figure.

Another factor that reduced the survey rates found here was that only detectable drugs, that is, those currently being tested for by screening laboratories, were included in the figures used for comparison with urinalysis. Thus, these figures would be expected to be somewhat lower than those reported in surveys where no breakout of detectable versus nondetectable amphetamines or barbiturates is made.

LIMITATIONS

A number of assumptions were made in this methodology. First, it was assumed that the random procedure for separating the two groups resulted in comparable sets of people. Since the assignment of individuals was done on a totally random basis, it was assumed the questionnaire group did not vary from the urinalysis group on any dimension which might be expected to result in significantly different drug using behavior.

Second, the observations made by the on-site researchers are not considered to be a thorough examination of each step in the urine collection procedure. The observations were made as time and opportunity permitted in the course of conducting the survey and interviewing program administrators. Nonetheless, they are the observations of researchers who had some knowledge of the importance of the procedures to the success of the

[1] Appendix G contains the coding scheme used to categorize and record questionnaire data for Questions 36A and 36B.

urinalysis program and who attempted to objectively appraise the impact of the collection procedures on the effectiveness of the overall program.

Third, as with any field study, the effect of having researchers in the area of an operation is never entirely known.

A fourth and final limitation resulted from the fact that the urinalysis sample was about twice the size of the survey sample. In part this size difference is accounted for by the fact that, by chance, the urinalysis sample drawn was somewhat larger than the survey sample. Another part of the problem, however, must be attributed to urine screening carried out by some posts on groups not included in the sample used for this project. Whether this affected comparability of the samples is unknown. For the purposes of the study it is assumed that the samples are comparable.

Chapter 3

RESULTS

The statistical data resulting from the survey and from the urinalysis are presented in this chapter. Summaries are provided of the interviews with personnel administering and operating the urinalysis program at each post and of the observations made by the field staff on the conduct of the procedures.

RATE COMPARISON DATA

Usage rates for amphetamines, barbiturates, narcotics, and drug combinations are presented in Table 3. Rates of laboratory positives and rates of clinically confirmed cases derived from the survey are presented also in Table 3. Of primary importance in this study is the comparison between clinically confirmed usage rates and the anonymous survey usage rate.[1] For all drug categories the survey rate is significantly higher than the confirmed urinalysis rate. (Z scores were computed to test the significance of the difference between the overall rates for each drug category. These Z scores are presented in Table 4).

It had been expected that the sample drawn would be sufficiently large to ensure that urinalysis positives would be found in all categories of drugs. However, for both barbiturates and combinations of drugs, no chemically confirmed users were identified. The differences in rates for amphetamines, narcotics and overall use are stated in terms of multiplicative factors in Table 5. The overall factor 18.34 may be inflated due to the fact that no confirmed cases were found for barbiturates or combinations.

In Table 6 clinically confirmed usage rates found in this study are listed with those found during the third quarter of FY 73 for the entire Army.

INTERVIEWS AND OBSERVATIONS OF THE IMPLEMENTATION OF THE URINALYSIS PROCEDURE

For the purposes of this discussion, the urinalysis procedure has been broken down into 10 steps. The steps, presented in a systematic flow in Figure 2 are as follows:

Step 1. Definition of the population at risk.
Step 2. Selection of the sample.
Step 3. Notification of selected individuals.
Step 4. Specimen submission.
Step 5. Identification of no-shows.
Step 6. Rescheduling no-shows.

[1] Note that the laboratory positive rate for each drug is closer to the survey rate than is the confirmed rate (Table 3). It may appear that the laboratory positive rate therefore represents a better estimate of the true prevalence rate. This may be true, but only because the laboratory rate includes those properly on prescription drugs but fails to include false negatives and those who have successfully lowered residuals of drugs by delay in providing a specimen or by purging the drug from their system.

Table 3

Comparison of Drug Usage Rates From Urinalysis and Survey

Type of Drug	Survey		Confirmed Urinalysis		Lab Positives	
	N	Rate (%)	N	Rate (%)	N	%
Amphetamines						
Post 1	8	1.6484	0	0	12	1.0850
2	9	3.3835	1	.1912	1	.1912
3	3	1.9608	2	.8594	2	1.2876
4	2	1.8519	1	.9259	1	.9259
5	2	2.1053	0	0	0	.0000
Overall	24	2.2556	4	.3933	16	.7733
Barbiturates						
Post 1	5	1.2255	0	0	5	.4525
2	7	2.6316	0	0	2	.3824
3	1	.5495	0	0	0	.0000
4	2	1.8519	0	0	2	1.8519
5	0	0.0000	0	0	0	.0000
Overall	15	1.4098	0	0	9	.4350
Narcotics						
Post 1	1	.2451	0	0	1	.0905
2	6	2.2556	1	.1912	3	.5736
3	1	.5495	0	0	0	.0000
4	1	.9259	2	1.5519	2	1.8519
5	0	.0000	0	0	0	.0000
Overall	9	.8459	3	.1450	6	.2900
Combinations						
Post 1	6	1.4706	0	0	3	.2715
2	7	2.6316	0	0	2	.3824
3	3	1.6484	0	0	0	.0000
4	2	1.8519	0	0	1	.9259
5	0	.0000	0	0	1	1.0000
Overall	18	1.6917	0	0	7	.3383
Total	66	6.2030	7	.3383	38	1.8366

Step 7. Safeguarding and shipping specimens.
Step 8. Receipt of laboratory results.
Step 9. Clinical evaluation.
Step 10. Disposition of evaluated individuals.

Below are descriptions of how the posts handled each of the steps.[1]

STEP 1. DEFINITION OF THE POPULATION AT RISK

Department of the Army Circular (DA Cir) 600-84, *Drug Abuse Testing Program* (9), described the program as being "applicable to all Department of the Army personnel."

[1]The urine testing procedure at Fort Carson, Colorado, is given in Appendix H.

Table 4

Z Scores for Differences Between Survey and Clinically Confirmed Drug Usage Rates[a]

Drug	Z Score
Amphetamines	6.6698
Barbiturates	36.6181
Morphine	4.8193
Combinations	26.0262
Any Use	6.2590

[a]All Z scores are significant at a level approaching infinity.

Table 5

Differences Between Survey Rates and Confirmed Urinalysis Rates Stated as a Multiplicative Factor

	Survey Rate (%)			Confirmed User Rate (%)	
Type of Drug	Observed	Confidence Interval[b]	Factor[a]	Observed	Confidence Interval[b]
Amphetamines	2.2556	3.6 - .9	11.67	.1933	.5 - 0
Barbiturates	1.4098	2.5 - .29	—	0	—
Narcotics	.8454	1.8 - .0	5.83	.1450	.4 - 0
Combinations	1.6917	2.9 - .5	—	0	—
Overall	6.204	8.5 - 3.9	18.34	.3383	.7 - 0

[a]Survey Rate = Factor X Confirmed User Rate

[b]Source: E.L. Grant, *Statistical Quality Control,* McGraw-Hill Publishing Co., New York, 1946. Confidence level is .95.

Table 6

Comparison of Confirmed User Rates Found in This Study and User Rates for Entire Army (for the Third Quarter, FY 73)

	% of Study Subjects (N=2,069)	% of CONUS for 3rd Quarter FY 73[a] (N=89,832 tested)
Amphetamines	.1933	.1191
Barbiturates	.0000	.2193
Opiates (Narcotics)	.0967	.1213
Combination	.0000	.0345
Overall	.2900	.4942

[a]Data provided by the U.S. Army Information Office.

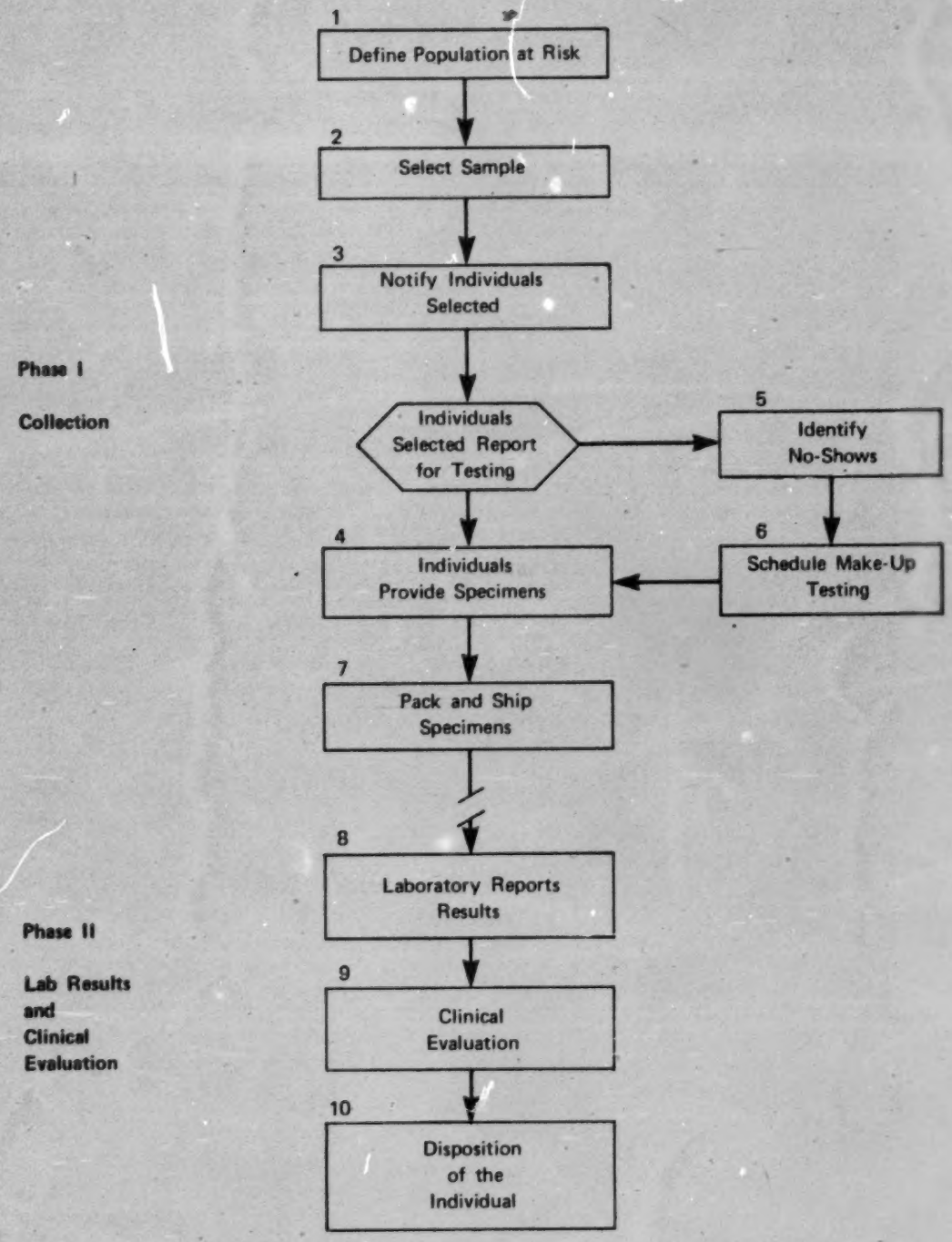


Figure 2. **Urinalysis Procedure**

However, after publication of that document, a decision was made to restrict urine screening to Army personnel 28 years of age and under. This change was electronically communicated to all Army installations in July 1972.

Implementation

Four of the five locations visited during this study, therefore, define the universe of those eligible for urine screening as all military personnel, assigned or attached, who are 28 years of age or under. The remaining location tests *all* assigned or attached military personnel regardless of age. This departure from the Department of the Army guidance is based on a command issued by the Commanding General of the installation.

Discussion

One apparent problem associated with definition of the universe is that there is occasionally some confusion as to whether only those *under* 29 are to be tested, or if testing is to include those 29 *and* under. At one installation, although the written policy stated that only those under 29 were to be tested, 29-year-olds were frequently included in the urinalysis sample.

A second problem stems from the presence of satellite and tenant activities at some of the posts visited. Control of such units is not as tight as control of units falling in the normal chain of command. Also, personnel data on the members of these units are often not kept at the host headquarters. The result is that special procedures sometimes have to be initiated to sample individuals from satellite/tenant activities, and follow-up of no-show personnel is more difficult. A similar problem can occur in training units. Since trainees are carried on separate morning reports and are not permanent party personnel, posts have had to inaugurate new procedures or supplement old procedures in order to include trainees in the population of people to be tested.

STEP 2. SELECTION OF THE SAMPLE

The sample selection schemes used in the urine screening program are outlined in Appendices E, F, G, and H of DA Cir 600-84. These are briefly described in sequence:

Random Selection Based Upon Equal Size Partitions. This scheme is used by installations desiring to test whole blocks of people at one time. The entire population of those eligible for testing is divided into equal size partitions (if units are already grouped in some manner the existing partitions may be used with this sampling scheme). The partition size may be any fraction of the daily quota. Several partitions may be selected to meet the quota. Selecting several small partitions has a psychological advantage over selecting two or three large partitions in that the more units involved in testing, the greater it *seems* are one's chances of being selected. Of course, the actual risk on any given day is the same regardless of partition size.

Alternate Scheme for Small Installations/Activities. This sampling procedure is to be used by installations whose daily quota is under 10. Under these circumstances random testing is conducted periodically rather than daily. Test days are selected randomly using Julian dates. The sample may be selected by equal size partitions or individually by Social Security number.

Random Selection Scheme for Installations With Few Assigned Units (less than nine). This rather complicated procedure (computer support is recommended) involves sample selection to allow unit integrity to be maintained. This procedure is flexible enough to allow a predetermined number of units to be selected at random on any given day as well as allowing certain units to be exempted from testing to fulfill essential

mission requirements. With the utilization of this scheme a given number of units are selected to participate in the testing for a particular day. Once the units have been randomly selected, individuals must be selected within those units based on the terminal digits of their Social Security number.

Random Selection Scheme for Installations With a Large Number of Assigned Units. This selection procedure is very similar to that outlined in Appendix G of DA Cir 600-84, although it is designed for installations with nine or more assigned units. The primary features of this scheme are the same.

Sampling procedures employed at installations involving data collection for this study are described in the following paragraphs. In order to provide anonymity to the posts involved, the alphabetic designations used to design posts in this Step are not the same as those used in discussions of other Steps.

Implementation

Location A. Sampling is done by the OIC of the Alcohol and Drug Branch of the Alcohol and Drug Control Office (ADCO). The sample is selected manually from a computer-produced roster which lists all units on post (350 company-size units). The sampling procedure is essentially like that described in Appendix H of DA Cir 600-84 (Random Selection Scheme for Installations With a Large Number of Assigned Units). Instead of using a table of random numbers to determine the units to be sampled, a computer program that yields a string of random numbers is employed. One or more three digit numbers produced in this fashion are used to select the units to be tested for any given day.

There are two exceptions to the above procedure. Two major commands at this installation conduct their own sampling. The Chief of the Alcohol and Drug Branch assigns testing days to these two units from which point they initiate their respective sample selection procedures. At one unit sampling is the responsibility of the Assistant G-1, and at the other it is accomplished by the Assistant Chief of Staff for Personnel. These units do, of course, coordinate frequently with the post Alcohol and Drug Control Office. However, the post ADCO does not monitor their sample selection procedures, consequently they really do not know whether their samples are drawn in accordance with DA Cir 600-84. One of these units, at the Commanding General's request, uses a testing frequency of two tests per person per year, although the installation is located in a minimum risk area where the prescribed frequency is 1.2 tests per person per year.

Location B. Sampling for urine screening is accomplished manually following the procedure described in Appendix E of DA Cir 600-84 (Random Selection Based Upon Equal Size Partitions). The NCOIC of the urine team draws the partitions to be tested from a list of all units on post (strength figures for these units are updated weekly). The population at risk is divided into 75 partitions. The sample selection as observed during data collection seemed to be conducted with a certain amount of latitude. Random procedures were occasionally by-passed if there was a particular unit they wished to test for some reason.

Location C. Sampling is computerized using a program developed at this location. The procedure employed is essentially the same as that specified in Appendix H of DA Cir 600-84 (Random Selection Scheme for Installation With a Large Number of Assigned Units). Post units are divided into 21 groups. The groups are randomly selected each week, and from the selected groups, randomly drawn samples are selected for urinalysis. Individuals selected appear by name on a computer-produced roster. The program used for sampling at this location has one flaw: Since it stops selecting people when a sufficiently large sample is drawn, those individuals at the end of the file are subject to a low probability of ever being tested.

Location D. Sample selection follows the procedure outlined in Appendix E of DA Cir 600-84 (Random Selection Based on Equal Size Partitions). The ADCO keeps on file 178 partition rosters. The partitions, however, are not of equal size. During the data collection at this installation, some partition rosters contained as few as 15 names, while others had more than 30 names. The ADCO stated that the rosters were continually updated by the units, although during the data collection one partition selected for testing contained fewer than one third of the people listed on the partition roster. Selection of the partitions is accomplished manually by the NCOIC of the Alcohol and Drug Control Office, or by a clerk assigned to the office.

Location E. Samples are drawn as specified in Appendix G of DA Cir 600-84 (Random Selection Scheme for Installations With Few Assigned Units). The urine testing office maintains a roster with the names of all Army personnel at this location who are eligible for testing. Names appear on the roster by unit, and within units names are listed in order of the individual's Social Security number. The urine screening roster is updated on a monthly basis. The actual sample selection is performed manually by the NCOIC of the testing office, or by his assistant.

Discussion

To be free from bias the sample selection for random urinalysis screening should be rigorously controlled. At the installations visited for this study there were many instances where the sampling procedures did not adhere to the guidelines specified in DA Cir 600-84. Specific examples would include: (a) purposive selection (other than command directed testing) when for some reason it was deemed desirable to test a particular unit; (b) when using Appendix E, failure to keep partition rosters current and using partitions of varying sizes; (c) when using Appendices G and H, testing entire units rather than selecting large clusters of units and sampling within those units based on Social Security number terminal digits. It should be mentioned here that departures from DA guidelines may well indicate inadequacies in these guidelines (for example, failure to consider all the constraints under which various installations must operate) rather than inappropriate application by those for whom they were intended.

STEP 3. NOTIFICATION OF SELECTED INDIVIDUALS

Guidelines for the Drug Abuse Testing Program simply state that the testing is to "be completely unannounced to the units or individuals to be tested." Notification procedures followed by the five locations included in this study are described below.

Implementation

Location A. The first contact with units to be tested is made within 24 hours of the scheduled testing time. The usual procedure is for the Alcohol and Drug Branch to contact the battalion executive officer(s) of the unit(s) to be tested. The executive officer in turn contacts the company commander(s) of the unit(s) concerned. At the time of the initial notification it is stressed that this is a "limited knowledge" program and that only those immediately concerned should be informed before the urine testing begins. Urine testing is usually performed immediately following the morning formation, and members of the unit are told of the test during that formation. (One major unit has adopted the policy of holding formations at 4:30 a.m. on urine testing days. The entire unit, including those living off post, is assembled through the use of the standard alert notification procedure.)

Location B. The battalion commanders of units to be tested are notified on the afternoon of the day before testing is to be conducted. They are asked to announce the test to the company commanders involved on the following morning, one half hour before the scheduled testing time. Individuals are generally notified during the morning formation immediately prior to testing.

Location C. Each major command appoints a project officer who serves as a liaison between the ADCO and the units of that command. On Monday of each week the ADCO provides the project officer(s) of the major command(s) which will be involved in testing for that week with a list of names of those to be tested. (For those to be tested Monday, the list is provided on the preceding Friday.) The command project officers provide lists to unit commanders one or two days in advance of the day of testing. Individuals are usually not notified until the morning of testing.

Location D. Commanders of units to be tested are notified by the ADCO or his NCOIC as soon as the sample has been selected. This notification usually occurs around 4:00 on the afternoon before the test day. Unit commanders are given the numbers of partitions to be tested. Each unit has a list of partition numbers assigned to it and rosters of individuals in each partition. Generally commanders notify individuals selected from their respective units on the morning of the day of testing.

Location E. Units are notified 48 hours prior to testing. Commanders or first sergeants of the units concerned are given the names of those to be tested and asked to notify the urine testing office of any absences expected on the test day. Unlike other locations, units are encouraged to contact people selected for testing as soon after notification as possible. This is done to make sure that selected personnel will be available at the scheduled testing time.

Discussion

At most of these locations units received notification prior to the scheduled time of testing. In most cases units to be involved in testing were notified on the day before testing was scheduled. In two locations units were notified two days before testing. In four of the five installations, however, units were asked not to notify individuals to be tested until the day of testing. Only one installation encouraged units to notify individuals before the day of testing. When one considers the problems inherent in conducting a program of this complexity, it is apparent that there are practical considerations which make it desirable to inform units before testing. This permits the minimization of no-shows, and the predetermination at that time of units in which a large number of absences (TDY, special detail, FTX, etc.) are expected on the test day. This will allow them time to schedule an additional partition or unit so that the daily quota can be met. On the other hand, prenotification increases the chances of forewarning potentially detectable users.

STEP 4. SPECIMEN SUBMISSION

DA Cir 600-84 specifies the following conditions for collection of urine specimens: (a) Collection must be under direct observation to ensure that the designated individual provides the specimen; (b) sample volume is at least 50 milliliters; (c) sample is inspected for evidence of physiological dilution. A suspect specimen will be checked for specific gravity and if below 1.010, additional specimens will be collected until specific gravity is above 1.010; (d) specimens will be labeled with an individual code number and the collection station of the person tested.

Implementation

The urine collection procedures employed by the five installations included in this study are discussed individually in the following paragraphs.

Location A. Urine collection at this location is the responsibility of the post hospital. The urine collection team does not come directly under the ADCO, but rather coordinates closely with that office. Testing is performed strictly on a mobile basis. On the day of testing the collection team arrives at the unit approximately one half hour before the testing is to begin. At that time they explain their requirements (a field table, a suitable latrine, and two copies of the unit roster) and find out from the First Sergeant how many men should be present for testing.

The actual process of urine testing involves having the men file individually past one member of the collection team who notes the names on the unit roster and hands out the specimen bottles. Specimen identification numbers are placed on the bottles before urine testing begins. As the individual picks up his designated bottle his name is entered on a form beside the appropriate identification number. If a man cannot urinate, he leaves his specimen bottle and his ID card with the collection team and waits until he is able to provide a specimen. The urine team sits inside the latrine being used for testing, so all testing is, in effect, directly observed. Specimens are checked upon submission for quantity and color. Suspected specimens are checked to see that the specific gravity meets the minimum requirement.

Location B. Specimen collection at this installation is treated as a command responsibility. Testing is conducted entirely on a mobile basis. Units being tested are required to provide one man to be used as a typist, one man to be used as a recording clerk, and one man grade E5 or higher to act as an observer. At least one member of the urine collection team is always present to provide necessary supplies, supervision, and assistance. In order to maximize the number of people tested, testing is conducted immediately following the morning formation. Those to be tested file past the table where the clerks are seated, pick up a specimen bottle at the table, and go into the latrine to provide the specimen. Specimen bottles are pre-numbered by the processing laboratory. Pre-numbered forms are also provided so the urine team has only to enter the name of each individual beside the number for the bottle he is given.

In most cases the latrine used is large enough to accommodate more than one man at a time. The NCO acting as observer stands inside the latrine during the testing. As the individuals come out of the latrine they hand their bottles, if full, to the clerk. Those who are unable to provide the quantity of urine needed for the urinalysis are told to keep the specimen bottle until they can provide the required amount. Samples suspected of being impure are sent to the hospital laboratory to have the specific gravity tested.

Location C. Urine collection is conducted at a fixed location for the most part, though mobile testing is provided upon request (the unit commander must request a mobile team no later than the afternoon before the test day). Walk-in testing is conducted at the urine collection facility from 7:30 a.m. to 3:00 p.m. Some units being tested report en masse, while others allow people to report individually. On the morning of the day they are to report, each individual is given a multiple copy form which must be taken to the testing location. When he reports to the urine collection facility he will present this form, along with his ID card, to the NCOIC. He will then take a specimen bottle and go to the latrine to provide his specimen. Specimens are submitted one at a time and each submission is directly observed by an NCO.

When the individual hands his full specimen bottle to the NCO in charge, his form is stamped and he is given a copy to take back to his unit. Also at this time specimen identification numbers are assigned and recorded. Specimens are examined for quantity and color upon submission. No specific gravity tests are made. Those who are

unable to provide a sufficient quantity of urine on their first try must wait at the collection facility until they can provide the required amount.

The same basic procedure is followed during mobile testing. Two man teams are sent to the requesting unit. One man stamps forms and dispenses bottles while the other observes submissions. Those who, after a reasonable period of time, fail to provide a sufficient quantity of urine are told to report to the urine collection facility before 3:00 p.m. that day.

Location D. Urine testing at this installation is always conducted at one central facility located in the post hospital annex. The hours of testing are 7:30 a.m. to 3:00 p.m. When individuals report for testing they fill out a card giving their name, SSN, unit, rank, date, duty phone, and any medication they are taking. They then step into the latrine where they pick up a specimen bottle and provide the specimen. As with Location B, the specimen bottles and recording forms are pre-numbered by the processing laboratory.

The NCOIC of the collection facility observes all submissions. Specimens are checked immediately upon submission for color and quantity. Samples which appear to be unusually pale are tested on the spot to see that the specific gravity is correct for urine. A system of strategically placed mirrors makes it nearly impossible to substitute urine. If an individual cannot provide a specimen on his first attempt (or cannot provide the quantity needed to conduct the analysis), he must wait there until he can. If he fails to provide a specimen on the day of testing it is counted as an unexcused absence.

Location E. Urine screening at this location is conducted primarily on a mobile basis. Two man teams are sent from the testing office to the units being tested. One man serves as a recorder and the other observes the specimen submissions. Each individual to be tested presents his Army ID card to the team member serving as the recorder and at the same time is given a specimen bottle. The specimen bottles and forms are numbered by the testing office prior to testing. Each name is recorded on the form next to the number corresponding to the number of the bottle handed the individual. The ID cards are returned as the individuals submit full specimen bottles. Those who cannot provide the quantity of urine needed return their bottles to the urine team clerk. Each unfilled or partially filled bottle is placed on top of the individual's ID card until he can complete the specimen. All specimen submissions are observed by one of the urine team members. If a specimen appears light in color and there is sufficient reason to believe that the substance is not urine, it will be tested to determine its specific gravity. However, actual laboratory checks for specific gravity are rare.

Discussion

Observation of specimen submissions is not carried out thoroughly in all cases. Normal diversions and the nature of the task itself contribute to the problem. It is quite likely that even the most sophisticated observation techniques (for example, the mirror set-up used at Location D) will not be successful in catching the more imaginative individuals. Specific gravity tests are helpful in detecting diluted specimens, however, they are used only when samples are suspect because of appearance or temperature. Also, specific gravity tests are not able to detect substituted urine.

STEPS 5 AND 6. IDENTIFICATION AND RESCHEDULING OF NO-SHOWS

Procedures for following up no-shows are not specified in DA Cir 600-84. That document only states the following: "A roster of personnel selected for testing, annotated to indicate individuals selected for testing from whom specimens were not

collected, is to be maintained for future audit purposes." However, the installations visited during this study did have established procedures for following up no-shows. These are described below.

Implementation

Location A. No-shows average about 20%. When urine collection for the day is completed the company commander is given an accounting of which men provided specimens. The CO must note the reason for absence for all those listed present for duty but who failed to provide a specimen. Also, it is the unit commander's duty to have the no-shows from his unit report to the collection facility for make-up tests within five days after the original test day. Usually a make-up day is scheduled on a day (within the five day limit) that will allow the unit commander the best fit with his unit training schedule.

Although the original urine tests at this location are conducted entirely on a mobile basis, the make-up tests are conducted at a central location. About 90% of all no-shows are eventually recovered through follow-up procedures.

Location B. No-shows average approximately 10 to 15%. No-shows are considered to be all those under age 29 who were assigned or attached on the morning report, but failed to provide a specimen on the day of testing. The unit being tested is required to list everyone eligible for testing and accounted for on the morning report on a form designed locally for that purpose. On this form all no-shows are indicated by reason for absence.

No-shows are followed up through the use of a procedure involving the random selection of individual unit make-up rosters. Units selected for make-up testing are notified on the morning of the day of testing. Units are given a list of names of specific individuals to be tested. Most no-shows are tested within two weeks of the original test day. It is estimated that 90% of the no-shows are recovered for testing through this follow-up procedure.

Location C. Unexcused no-shows average approximately 10%. All people who provide urine specimens are marked off the computer produced roster at the end of each test day. The NCOIC of the test facility calls in the names of no-shows to the ADCO. The ADCO then informs the project officers of commands involved who at that time respond by providing reasons for not showing (e.g., TDY, LOA, ETS, PCS) for those for whom such excuses have been found. To follow-up on the unexcused no-shows, the project officers notify the unit commanders who in turn have the individual report on the following morning. Usually no-shows report within two days.

Location D. No-shows average 3 to 10% depending on the unit tested. The names of those who provided specimens are sent to the ADCO at the end of each day's collection. That office checks its partition rosters to see who failed to show for testing and sends a list of names to commanders of units participating in that day's testing. The unit commanders must reply by endorsement, giving reasons for each no-show.

Make-up sessions are not usually scheduled. Instead, those with legitimate excuses are sent individually to the collection facility as soon as possible (e.g., as soon as they return from leave, TDY, etc.). People with unexcused absences normally receive some form of punishment (Article 15 being the most common) and, in most cases, are required to report to the urine collection facility to provide a specimen. In the event that an unusually large number of people from one partition fail to show for testing, the whole partition will be rescheduled. Approximately 80 to 85% of the no-shows are recovered through follow-up procedures.

Location E. No-shows average around 5%. The urine testing office keeps on file names of all no-shows. Follow-up testing is not scheduled on a regular basis. Instead, the NCOIC of the testing office periodically selects a date for follow-up testing and will test all no-shows on record at one time. In the past, no-show testing has included as many as

600 people in one day. Most follow-up testing is conducted at the urine testing office. Individuals to be tested are notified on the morning of the day they are to be tested. Testing is generally conducted in the afternoon, so notification for follow-up testing gives those involved about three to four hours notice. It is estimated that virtually all (almost 100%) of those no-shows still assigned to the command in which they were originally to have been tested are recovered through follow-up testing.

Discussion

The problem of no-shows is amplified by the fact that there is not one definition that is universally accepted. No-shows can be divided into three categories. First, there are those individuals who are listed as "not present for duty" on the morning report. This includes TDY, leave of absence, PCS, and AWOL. Second, there are those people listed as "present for duty" on the morning report but who had excused absences on the test day. This includes, for example, men on sick call and guard duty. Third, there are those who are present for duty on the test day, but fail to report for testing, or report but fail to urinate. Most installations include categories two and three in their definition of no-shows, some only category three, and a few include category one (i.e., TDY and leave). For purposes of this study no-shows have been limited to category three.

As with the routine testing, the success of follow-up efforts hinges on the cooperation of the unit commanders. At most installations it is their responsibility to note reasons for absences and to have the no-shows available for make-up testing. Commanders who fail to provide the needed emphasis or support seriously reduce the effectiveness of the program.

Note also that 90% recovery of a 20% initial "no-show" group means that 2% of the population are never recovered.

STEP 7. SAFEGUARDING AND SHIPPING SPECIMENS

Department of the Army guidance states that specimens should be "shipped on the day of collection to the laboratory designated to serve the installation." Furthermore, they should be shipped "without preservation or refrigeration to arrive at the testing laboratory within five days of collection." It also states that "precaution will be taken to prevent unauthorized access to or handling of these samples."

Implementation

The procedures followed by the five study installations are related below.

Location A. Physical security of the specimens is maintained at all times, since someone on the collection team is with them from the time they are collected until they are shipped to the processing laboratory. Specimens are shipped via commercial air freight to the processing laboratory on the day they are collected and usually arrive at the lab that same evening.

Location B. Specimens are packed and shipped to the processing laboratory on the day of collection and usually arrive at the laboratory on the day after shipment. Either a member of the urine team or the individual responsible for packing and shipping is with the specimens from the time they are collected until they are shipped.

Location C. Specimens are secured at all times. When none of the testing office staff is in the room with the specimens they are placed in a foot locker which is then padlocked. The specimens are shipped to the processing laboratory within 24 hours after collection. Specimens collected on Fridays may not be shipped until the following Monday.

Location D. At this installation virtually all urine testing activities are carried out in one room which is a combination latrine/office. In that room the specimens are submitted, checked, and packed for shipment, so there is almost no way that they could be tampered with or stolen. When no one is in the room, the door is closed and locked. All specimens are shipped to the laboratory on the day of collection. Occasionally, for special reasons, testing is conducted on Saturday. In this event, specimens are shipped on the following Monday. Shipments are sent airmail and usually arrive at the processing lab on the day after shipment.

Location E. One member of the urine collection team is with the specimens at all times. As soon as the urine team returns from testing the specimens are packaged for shipping. They are then shipped via commercial carrier on the day they are collected.

Discussion

Based on the experiences of the installations visited during this study, there appear to be no significant problems in securing or shipping the urine specimens.

STEP 8. RECEIPT OF LABORATORY RESULTS

DA Cir 600-84, in a discussion of requirements for drug testing laboratories, states that they must "report confirmed positive results to the originating agency within 48 hours after receipt of specimens. A written follow-up report of results on all specimens will be mailed within 48 hours after completion of the work." The installations studied report the following service from their respective processing laboratories.

Implementation

Location A. Telephonic notification of laboratory results is usually received two to three weeks after the specimens are shipped. Written confirmation generally arrives about the same time, and occasionally arrives before telephonic notification.

Location B. Telephonic notification of laboratory positives is received within about three days. A written report from the laboratory follows all telephonic reports.

Location C. Telephonic notification of laboratory positives is received on an average of three days after specimens are shipped.

Location D. Telephonic notification of results is usually received from the processing laboratory two to three days after shipment of the samples. Written confirmation of laboratory results usually arrives about one week after shipment.

Location E. Telephonic notification of the laboratory results is received three days to a week after specimens are shipped. Written confirmation generally arrives about two weeks after shipment.

Discussion

These data indicate that some of the processing laboratories are having difficulty meeting their deadlines for notification of results.

STEPS 9 and 10. CLINICAL EVALUATION AND SUBSEQUENT DISPOSITION OF EVALUATED INDIVIDUALS

There are only two statements in DA Cir 600-84 regarding the clinical evaluation of laboratory positives: (a) "Persons with confirmed positives are made available for clinical evaluation and, if appropriate, detoxification, counseling, and treatment," and (b) "When

a positive test report is received on an individual, he will be clinically evaluated to determine its significance. If this clinical evaluation results in a determination that the individual was abusing drugs, the date and diagnosis will be entered in SF 600, his health record, along with the notation 'Identified through biochemical testing and clinical evaluation.' "

DA Cir 600-85, *Alcohol and Drug Abuse Prevention and Control Program* (10), provides more detailed guidance: "If a urine specimen is positive for amphetamines, barbiturates, or opiates, the individual involved must be referred to an appropriate medical facility for clinical evaluation. At the medical facility, the man whose urine is positive undergoes evaluation concerning his use of drugs. Evaluation involves application of clinical judgment by a physician. Some individuals will be found to be taking drugs for legitimate medical purposes; others may have been identified falsely through laboratory or administrative error. Such individuals will not necessarily require admission as an inpatient to the medical facility or referral to the halfway house or rap center for evaluation. Immediate retesting may be indicated for some to resolve questions concerning possible drug abuse. Great care should be taken to ensure that soldiers are not incorrectly identified as drug abusers."

Disposition of individuals after clinical evaluation was further specified by an electrical message dated December 1972, entitled "Urinary Surveillance Program—Reports and Records." This message outlined the details of a program for surveillance of all personnel with laboratory positives who were not, at the time of testing, using the detected substance as prescribed medication and who furthermore deny use of illicit drugs. Under the urinary surveillance program, all individuals with laboratory positives submit three urine specimens for a period of eight weeks. Subsequent positives will result in the individual's placement in the drug rehabilitation program.

Implementation

Descriptions of the clinical evaluation procedures employed by the installations participating in this study are given below.

Location A. Upon notification of positives by the processing laboratory, commanders of units tested are given the names of individuals in their respective units who are reported as laboratory positives. The unit commander takes responsibility for the final determination as to whether or not the individual was using a drug on a physician's prescription. (When individuals report for the urine test they are asked if they are taking a drug on a doctor's prescription. If they are, the drug is noted at that time.) If, during the commander's interview the individual admits to drug use, he is automatically placed in the rehabilitation program. If he denies drug use, the commander has three options: (a) observe the man closely in the future; (b) have the man retested; or (c) have the man placed on the surveillance program.

Location B. Units are notified of individuals whose specimens turn up positive. However, this notification is always followed by a statement to the effect that these men are not to be considered drug users unless clinically confirmed. During the confirmation interview a counselor (not a physician) determines that the man:

(1) Is a confirmed positive—either he admits to being a drug user or it is obvious to the counselor that he is a drug user. In this event the man is placed in the rehabilitation program where he will receive counseling and will be required to submit two urine specimens a week for eight weeks.

(2) Is a clinical negative—he is taking the detected drug on a doctor's prescription. This is verified by reading the prescription from the bottle of medicine or by checking the man's medical records. If he was prescribed the drug by a civilian physician, that physician is contacted to verify the prescription. Clinical negatives are excused from further action.

(3) Does not necessarily fall in either of the first two categories—there is not enough evidence to make a determination. In this case the man is placed on the surveillance program.

Location C. Upon receipt of the list of positives from the laboratory, the individuals are identified and notification is made through normal channels (i.e., ADCO to command project officers to unit commanders). Individuals with laboratory positives report with their medical records to a psychiatrically trained physician. During the evaluation interview the individual is first asked if he had been taking any prescription drugs at the time of his urine test. Medical records are examined to verify prescribed medication. If it is discovered that the individual was prescribed the substance detected in his urine specimen, no further action is taken. If he has no prescription, he is placed on the urinary surveillance program. If subsequent specimens are positive, the individual will be given the option of entering the rehabilitation program or will possibly evoke command action (e.g., Article 15 or board action). If no positives occur during the surveillance period, no action is taken assuming the original test was a false positive.

If the individual admits drug use, he is placed in the rehabilitation program and is offered his choice of in or out patient rehabilitation. If while in the rehabilitation program the individual again comes up with a positive urine test, he may be dismissed from the program and some form of command action may be taken.

Location D. During the clinical confirmation interview, the staff psychiatrist asks the individual if he was using the drug detected in his urine. If he admits use he will be entered in the rehabilitation program. If he denies use and has no prescription, he is told that he has two alternatives: (a) he can enter the rehabilitation program and receive counseling and therapy or (b) he must be placed in the urinary surveillance program. If it is evident that the man has a problem, he is urged to enter the rehabilitation program.

Location E. When the report from the processing laboratory is received, the units concerned are given the names of individuals whose specimens were positive. Appointments are set up for these individuals to see the staff physician of the Alcohol and Drug Control Office for confirmation of the laboratory results.

During the interview the staff physician will try to determine if the individual is actually a drug abuser. First, his medical records are screened to see if he was taking medication on a doctor's prescription at the time of the urine test. If not, he is asked if he has been using illicit drugs. If he admits to illicit drug use, he will be placed on the rehabilitation program. If he denies illicit drug use and was taking no prescription drugs at the time of his urine test, he will be placed in the urinary surveillance program.

There is occasionally a case where an individual with a laboratory positive will be declared an "apparent false positive" by the examining physician and will be exempted from the urinary surveillance program. The decision is based on the individual's record and supporting information from superiors and work associates.

Discussion

These installations vary somewhat in their interpretation and implementation of the Army guidelines regarding the clinical evaluation of laboratory positives and the disposition of individuals after evaluation. For example, while three of the installations have physicians performing the evaluation interviews, one assigns this task to counselors and another has the individual's commanding officer perform this evaluation. However, all five installations do have some evaluation procedure. Disposition of the individuals after the evaluation is basically the same at each installation with some variation in the latitude allowed in determining the individual's disposition. It should be noted here that shortly after the data collection for this study, detailed guidelines concerning the clinical evaluation and disposition of laboratory positives were sent to all Army installations and activities.

OPPORTUNITIES FOR EVASION OF DETECTION

Unless the urinalysis procedures are well designed and nearly perfectly executed, there is ample opportunity for even a relatively unsophisticated user to evade detection. Each of the ten steps of the urinalysis procedure is examined for the opportunities provided the potentially identifiable user (PIU).

Steps 1 and 2: Definition of the Universe of Those to be Tested and Selection of the Sample. A PIU has no control over whether or not he falls into the universe of those to be tested. Neither does he have control over whether or not he is selected for testing on any given day. He may escape the system through no efforts of his own if the installation to which he is assigned does not follow the prescribed sampling procedure. Poor sampling techniques could create a bias which would keep some individuals from ever being called to provide a specimen. Of course, conversely, some people could be selected for urine testing more frequently than should be expected.

Step 3: Notification of Selected Individuals. Only when units are informed more than a day in advance and where the list of those to be tested is not secure can a PIU get advanced warning of the test. (However, it should be noted that even with 12-24 hours warning, the user who knows something about the technical aspects of urine screening knows that with the consumption of large amounts of liquids, he can reduce, by a factor of 10, the likelihood of detection of any drugs in his system.)

Steps 4, 5, and 6: Providing Specimens, Identification of No-Shows,[1] and Rescheduling No-Shows. The PIU has the greatest opportunity for evasion when it comes to when or whether he will provide a specimen. He may decide not to appear at the urine collection site, knowing that he could probably provide a sufficiently plausible explanation to his unit commander so that at worst he would simply be rescheduled for testing a day or so later. This of course greatly decreases the likelihood of positive identification of any drugs that may be in the urine.

If the PIU is at a post where he gets no forewarning of the test, his easiest option is simply to claim that he cannot urinate. If he persists for an hour or so, he will be told to report back that afternoon. In that time he has a chance to take a number of evasive actions. If he is told to stay until he provides a specimen, he can hold out all day. As long as he is in fairly good standing at his unit, the possibility is that at worst he will get a verbal reprimand and a new appointment to provide a specimen.

Step 7: Safeguarding and Shipping Specimens. Once submitted, it would be difficult for the PIU to locate his specimen if he wished to alter it. At all installations visited during this study, specimen security was extremely good. In every case if a member of the testing office was not physically with the specimens, they were kept under lock and key. Even if the PIU could gain access to the bottles it would be difficult to determine which was his own, since they are identified only by numbers. If he could gain access to the bottles and the control forms he could locate his Social Security number on the control form and find out what code number was assigned to his specimen bottle. This would be the most difficult technique for evading detection.

Step 8: Receipt of Laboratory Results. Laboratory results are telephoned in and then followed-up by written results. It is unlikely that anyone would be able to evade detection by tampering with the lab results.

Steps 9 and 10: Clinical Evaluation and Disposition of Evaluated Individuals. Let us assume that up to this point there have been no attempts to evade detection and every part of the system has worked perfectly. The last opportunity for the PIU to remain unidentified as a user is during the course of the clinical evaluation. If at this time the

[1] Note again that installations differ regarding the definition of no-shows; therefore those followed up and actions taken vary.

PIU steadfastly denies drug use and has no physical signs of addiction, he will automatically be placed in the urinary surveillance program. The surveillance program involves eight weeks of urine tests with three tests required per week. Even though the program is troublesome, it is surely preferred to the alternative of being officially tagged as a drug user and having to combat all the implications of that label. For a man who is not physically addicted to a drug—the typical drug experimenter, for example—this program might be the safest way of evading detection by simply refraining from use of detectable drugs, until after the surveillance period.

SUMMARY OF OBSERVATIONS

The observations reported previously support the conclusion that if an individual is strongly motivated to avoid detection, he will most likely succeed. The Drug Abuse Testing Program seems to work well considering the various constraints that militate against its successful operation. Nevertheless, a program designed to identify people who have committed an illegal act will almost surely suffer some circumvention. The weak areas in the system will of course be the points most often penetrated by individuals desperate enough to engage in evasion tactics.

Several weak areas were observed in isolated cases, although there seem to be two prevalent weaknesses in the system: (a) lack of vigilance in the observation of submissions and (b) insufficient command support, which results in no-shows and other associated problems.

Four out of five of the study installations had inadequate or marginally adequate observation procedures. If one can generalize from this observation it means that many drug abusers are probably finding it easy to substitute contraband urine. "Easy" does not necessarily mean that an individual can walk into the testing office or location with a bottle of "clean" urine in his pocket and transfer it to his designated specimen bottle. It does mean that the individual with a somewhat sophisticated system (a tube and squeeze bottle apparatus, for example) and a convincing technique may transfer contraband urine to his specimen bottle unnoticed. This evasion tactic has been documented at several installations.

A much more fundamental and far reaching problem is the lack of support for the program offered by many unit commanders. Some commanders flatly oppose the urine screening program on legal or ethical grounds. Many, however, simply feel that it is an irritating procedure that periodically interferes with their unit's performance of its assigned mission. It is the company level commander's responsibility to make sure that individuals selected from his unit are available for testing at the scheduled time, and to account for all no-shows. If the company commander fails to provide the needed emphasis and support, he permits a crack in the system. Some of his people will not be present for testing even though they do not have legitimate excuses, and when they are reported as no-shows they may receive nothing more than a mild reprimand. Every drug abuser in the Army almost certainly knows his commanding officer's attitude toward the testing program.

Another factor that contributes to the comparatively low urinalysis rates is a built-in part of the testing program—the eight-week surveillance procedure. This procedure is, of course, an important safeguard against the false labeling of individuals as drug abusers. It necessarily operates to cause conservative drug usage statistics. Although, as intended, it does protect false positives, it also undoubtedly protects many true positives. In other words, a man with a true laboratory positive may escape the screening system by denying drug use during the clinical confirmation interview, and refraining from use of detectable drugs during the eight-week surveillance period.

OTHER FINDINGS

ATTITUDES TOWARD THE PROGRAM

The responses of the 1,059 individuals who answered the question concerning their individual attitudes toward the urinalysis program were placed in six categories: (a) Good; (b) Good, but have some reservations; (c) Indifferent; (d) Moderately Bad attitude; (e) Strongly Bad attitude; and (f) those who feel the program to be Unconstitutional. Responses in each category are shown in Table 7.

Table 7

Attitudes Toward the Program

Response to Survey	N	%
No answer	185	17.5
Good	369	34.8
Good—but have some reservations	118	11.1
Indifferent	51	4.8
Moderately Bad attitude	237	22.4
Strongly Bad attitude	19	1.8
Unconstitutional	37	3.5
Misunderstood question	43	4.1
Total	1,059	100.0

The most frequently indicated category was "Good" in which 34.8% of the total sampled responded: The second most frequently indicated category was "Moderately Bad" at 22.4%. Just over 11% of the individuals felt the program was "Good—but had some reservations," 4.8% were indifferent, and 1.8% were "strongly against" the program. Three and one-half percent of the individuals responding felt that this program was "Unconstitutional."

DAYS OF NOTICE PRIOR TO URINE COLLECTION

The item which concerned the number of days warning received by the individual prior to providing the urine sample was answered by 1,053 respondents and indicated a total of seven different time periods ranging from 0 to seven days.

Of the total population, 86.8% indicated that they received no prior warning, 10.3% received 1 day prior warning, and 2.5% of the population received 2 to 7 days of warning (2 days, .8%; 3 days, .7%; 4 days, .8%; 5 days, .1%; and, more than 5 days, .1%; .6% of the responders did not answer this item.)

EVASION TECHNIQUES

Of 1,059 respondents 1,024 or 96.7% did not respond to the question involving evasion techniques. However, those responding indicated a variety of methods in

attempting to escape detection. Of the entire group 1.4% responded that they had used some method to avoid detection but did not give any specific method. Flushing out the system with liquids was a method of avoiding detection used by .6% of the population while .4% had used another person's urine, either through some means of exchanging bottles, rigging a container and tubes under the clothes which could conveniently be used to fill the urine collection bottle (and other such methods), or having someone else fill their bottle at the collection point. Also, as indicated by .1% of the responding population, liquid substances other than urine were substituted or neutralizing agents were added to the potentially positive urine. One-tenth percent indicated that they went AWOL, 2% did not show up for the urine test, and 3% did not urinate, as a means of avoiding any possible drug usage detection through urinalysis. Other individuals (.1%) indicated that they take drugs on a schedule, that is, they understood that urine sampling takes place on certain days. Consequently these individuals take drugs only on days which will give them enough time to allow the abused drug to leave their system. The last method mentioned of avoiding detection is to fake a prescription (.2% of the population), that is if drug use detection occurs, the individual will produce a fake prescription which, if accepted, exonerates him and terminates any further investigation.

RESPONSE TO SUPPLEMENTAL QUESTIONS

For a subsample of about 300, a supplemental page (Appendix D) was included with the regular questionnaire. The purpose of this supplemental sheet was to (a) provide some indication of knowledge concerning categories of nondetectable drugs and (b) determine what effect random urinalysis screening had on deterring individuals from using drugs.

Question A, "Which of the following drugs can be detected by urinalysis?" included nine answers which covered marijuana, psychedelics, barbiturates, narcotics, and amphetamines as individual answers, and four answers of various combinations of those drug categories.

Of those administered, there were 260 usable questionnaires. Of those, 13.46% left Question A blank or wrote "don't know." The most frequently indicated item was "all but *a*" (*a* is marijuana), which was indicated by 44.23% of the respondents. The next most frequently answered items were "all the above," and "*c, d, e* only" (the correct answer), answered by 15.38% and 12.31% of the sample, respectively. Respondents answering "*b, c, d* only" and "Narcotics" were 5.77% and 3.85%, respectively. "Marijuana" was answered by 1.92% of the respondents, and "Barbiturates" was answered by 1.54% of those given the supplemental questionnaire. "Amphetamines" were indicated by .38% of the respondents, as well as .38% for each of the following double responses: "Barbiturates-Narcotics," "Marijuana-Psychedelics," "Marijuana-All of the above." About one out of eight (12.8%) of the respondents correctly identified what drugs could be detected on urinalysis.

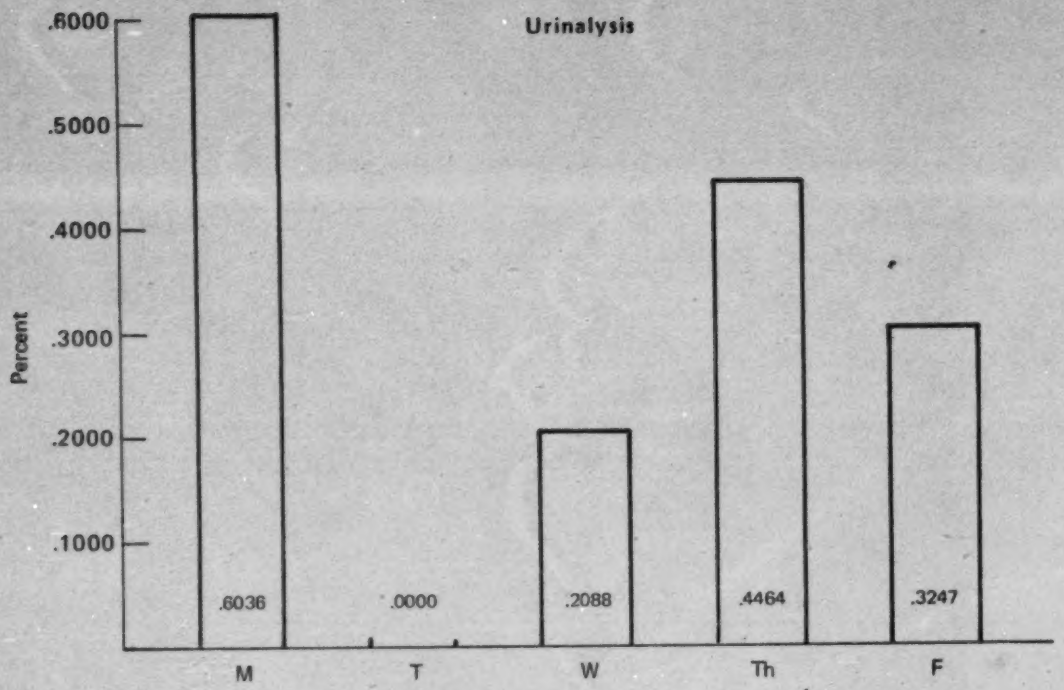
Question B, "Have you ever decided not to use drugs because you were afraid of being caught by a 'piss' test?" The three possible responses to this item were "Yes," "No," and "I never thought of using any drugs." Of the 260 usable questionnaires, 3.46% indicated *Yes*; 53.08% of the respondents indicated *No*; and 38.46% responded "I never thought of using any drugs." Five percent failed to respond appropriately. Of those who have presumably considered using drugs, only 6% see detection by urinalysis as a threat.

Given the limitations of a small sample, anonymous questionnaire survey, it is suggested that few viewed random urinalysis screening as a deterrent to their drug use.

DRUG USAGE BY DAY OF THE WEEK

One currently popular hypothesis is that drug usage occurs more heavily on weekends. The question is whether or not a pattern of weekend drug use is developing similar to weekend alcohol usage. The incidence of use by day of the week derived from the data gathered for this study is presented in Figure 3.

Inspection of this graphical presentation indicates that the days on which highest drug usage is indicated are Monday and Thursday. It may be conjectured that weekend use is being augmented by a dose during the middle of the week to keep things going.



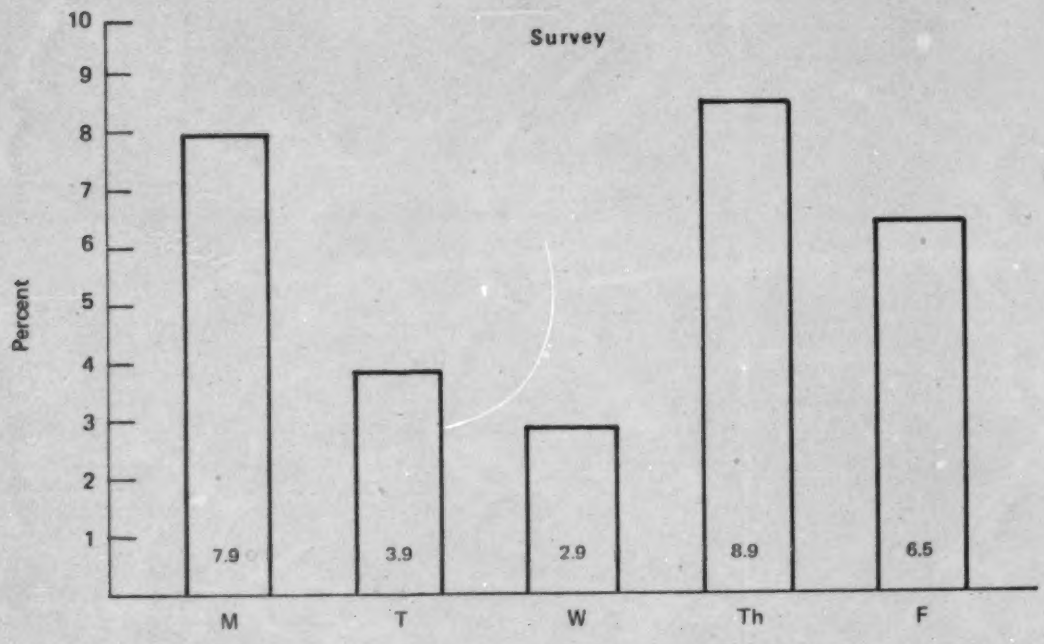


Figure 3. **Overall Use of Drugs by Day of the Test Week**

Chapter 4

CONCLUSIONS AND IMPLICATIONS

SUMMARY OF FINDINGS

For the drugs for which ratios were calculated, the survey rate is about 10 times the urinalysis rate of drug abuse prevalence. Given that extensive efforts were made to ensure that the questionnaire data provided valid and comparable results, and given that opportunities for evading detection as an abuser exist in the urinalysis procedure, the survey rates resulting from this study are viewed as valid estimates of the rates which should be obtained through the urinalysis procedure.

EFFECTIVENESS OF RANDOM URINALYSIS SCREENING

Although the formal purpose of this study did not include the evaluation of the random urinalysis screening program, the following observations made by the research staff may be useful in meeting future objectives: (a) Prevalence statistics derived from the urinalysis procedure represent only a fraction of the estimated incidence of abuse; (b) the procedure is identifying only a small percentage of users; and (c) indications from a subsample of the study show that few individuals see the threat of urinalysis as a deterrent to their use of drugs.

The following issues should be more rigorously addressed to improve the random urinalysis screening procedures:

(1) Installation of personnel accounting systems, which must include up-to-date information on all personnel for which an installation has testing responsibilities, should be assured.

(2) Effort should be made to ensure that all personnel selected for testing are required to provide samples on the date selected. Priority to complete the procedure should be given over other commitments.

(3) Standards for facilities for providing specimens should be developed, and sufficiently trained, permanently assigned personnel should be provided to staff the urine collection team.

(4) Guidelines regarding "no-shows" should be established to:

(a) Define acceptable reasons for "no-show."

(b) Define categories of "no-shows" and appropriate follow-up action on each category.

(5) Commanders at all levels should be advised of their responsibilities regarding support of the program. They should understand the impact of their support on the success of the program and the need to ensure that (a) selected personnel report and provide specimens on the date selected, (b) laboratory positive individuals report for clinical evaluation, (c) personnel required to undergo eight-week surveillance testing do so religiously, and (d) appropriate administrative actions be taken on individuals failing to comply.

(6) Clinical confirmation procedures should be standardized and the necessary medical or other professional personnel should be made available to support the program.

Supplemental Findings. The general population seems to be relatively sophisticated in regard to the program. One in eight knows which drug types are detectable and which are not. Almost all realize marijuana is not detectable. About 3.5% report evading detection by using a number of techniques. Further, very few of the 60% of those who have at least considered using drugs see urinalysis as a deterrent to that use.

DISCUSSION

This study compared the rates of drug abuse using an anonymous survey with rates derived from the random urinalysis screening program. As had been expected, the survey rates were significantly higher than the urinalysis rates. Although there is no ultimate way to determine the *true* rate, the survey rates are assumed to be a relatively good estimate of the incidence of use during any given three-day time period. The survey rate is a better estimate of the incidence of abuse than the urinalysis rates in that the field-implemented random screening procedures provide ample opportunity for the potentially identifiable user to successfully avoid detection.

It should be understood that, from what was observed by the field researchers, those operating the random testing procedures are essentially carrying out their responsibilities and duties in a conscientious manner. There was real concern that the urinalysis program work, but along with this concern was an appreciation of the innate problems in implementing a program of this kind. The program poses a massive personnel accounting and logistics problem which requires substantial support by commanders. The simple fact that posts must oversample by about a third just to make sure they meet their quota is an indication of the magnitude of the problem.

Although there are acknowledged limitations to the study reported here in regard to its attempts to objectively observe the effectiveness of the random urinalysis screening program, the implication of the study is that the program is only partially effective in achieving its intended goals. This is not to say that the urinalysis program has not been of value. The program is a substantial effort to address a problem that has affected the lives of individual soldiers and the functioning of military units. Moreover, the program has attempted to provide a mechanism for directing users into treatment strategies which can hopefully redirect degenerated abusers back into more productive life styles.

There are, however, some tradeoffs for the Army which have not been fully recognized. On one hand, some abusers are being identified and placed in treatment. On the other hand, there are some negative aspects in terms of morale; costs in time, material, and contracting fees; and effects on the overall image of the Army. About one-third of the survey population used in this study supported the program without qualification. About two out of five people in the sample had opinions which ranged from "It's good, but . . . " to severe criticisms regarding both the intent and/or value of the program. These opinions are presumably having some adverse effect on the general morale of Army personnel. This assumption is verified by a number of "off the record" comments received by the research field staff. Some of these remarks came from some of the operators of the random testing program, some came from unit commanders, and others came from individuals selected for testing. The question then is what effect might the program, and the publicity regarding the program, be having on such things as recruiting efforts within the context of the all-volunteer force. Similarly, what is the program's effect on the development of professionalism in the Army? It is difficult to reconcile the need to occasionally provide a urine specimen under direct observation with the idea of seeing oneself as a responsible professional who is respected for his job in the Army.

Given that the random urine screening program is to continue in the foreseeable future, what can be done to improve its effectiveness? First, the problems discussed in the Conclusions section should be addressed. Second, innovations such as requiring the selected individual to identify the medications he is taking prior to his submission of the specimen should be employed at all locations. Third, the visibility and credibility of the treatment programs should be increased. This would make such programs a more attractive alternative to the drug abuser, whether he is initially identified by urinalysis or decides to enter such a program on a self-referral basis.

Given the limitations of the current study, some questions have been raised regarding the utility and viability of the random testing program. It is suggested that additional investigations be conducted and directed at (a) the broader organization impact of the random urinalysis screening program, (b) the effectiveness of the program in achieving its three stated objectives, and (c) the relative effectiveness of random testing versus alternative approaches such as command direct testing of units on an as-needed basis.

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AND

APPENDICES

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Appendix A

DEMOGRAPHIC DISTRIBUTIONS OF SURVEY SAMPLE

Table A-1

Distribution of Survey Sample: Pay Grade by Post

	Posts											
	1		2		3		4		5		Total	
Pay Grade	N	%	N	%	N	%	N	%	N	%	N	%
E1	3	1.6	7	2.6	10	2.5	2	1.9	3	3.2	25	2.4
E2	40	22.0	65	24.4	55	13.5	21	19.4	6	6.3	187	17.7
E3	24	13.2	77	28.9	79	19.4	14	13.0	24	25.3	218	20.6
E4	48	26.4	57	21.4	94	23.0	35	32.4	25	26.3	259	24.5
E5	36	19.8	36	13.5	65	15.9	19	17.6	16	16.8	172	16.2
E6	6	3.3	8	3.0	30	7.4	4	3.7	12	12.6	60	5.7
E7	0	0.0	0	0.0	15	3.7	0	0.0	0	0.0	15	1.4
E8	0	0.0	0	0.0	4	1.0	0	0.0	0	0.0	4	0.4
E9	0	0.0	0	0.0	3	0.7	0	0.0	0	0.0	3	0.3
O1	4	2.2	4	1.5	2	0.5	1	0.9	0	0.0	11	1.0
02	2	1.1	3	1.1	10	2.5	2	1.9	1	1.1	18	1.7
03	12	6.6	3	1.1	17	4.2	7	6.5	6	6.3	45	4.2
04	0	0.0	0	0.0	4	1.0	0	0.0	0	0.0	4	0.4
05	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	1	0.1
06	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	1	0.1
W1	2	1.1	0	0.0	1	0.2	0	0.0	0	0.0	3	0.3
W2	2	1.1	0	0.0	4	1.0	0	0.0	0	0.0	6	0.6
CW3	1	0.5	0	0.0	0	0.0	0	0.0	0	0.0	1	0.1
Not Given	2	1.1	6	2.3	13	3.2	3	2.8	2	2.1	26	2.5
Total/post	182	100.0	266	100.0	408	100.0	108	100.0	95	100.0	1,059	100.0

Table A-2

Distribution of Survey Sample: Age by Post

	Posts											
	1		2		3		4		5		Total	
Age	N	%	N	%	N	%	N	%	N	%	N	%
18	11	6.0	29	10.9	38	9.3	6	5.5	2	2.1	86	.08
19	16	8.8	38	14.3	42	10.3	2	1.9	5	5.3	103	9.7
20	50	27.5	51	19.2	55	13.5	23	21.3	17	17.9	196	18.5
21	26	14.3	42	15.8	61	15.0	20	18.5	14	14.7	163	15.4
22	11	6.0	28	10.5	38	9.3	22	20.4	6	6.3	105	9.9
23	9	4.9	22	8.3	19	4.7	5	4.6	6	6.3	61	5.8
24	14	7.7	15	5.6	22	5.4	7	6.5	7	7.4	65	6.1
25	16	8.8	11	4.1	20	4.9	3	2.8	9	9.5	59	5.6
26	8	4.4	4	1.5	17	4.2	6	5.6	11	11.6	46	4.3
27	7	3.8	8	3.0	5	1.2	3	2.8	6	6.3	29	2.7
28	7	3.8	6	2.3	6	1.5	4	3.7	6	6.3	29	2.7
>28	6	3.3	6	2.3	79	19.4	5	4.6	3	3.2	99	9.3
Not Given	1	0.5	6	2.3	6	1.5	2	1.9	3	3.2	18	.04
Total	182	100.0	266	100.0	408	100.0	108	100.0	95	100.0	1,059	100.0

Table A-3

Distribution of Survey Sample: Ethnic Group by Post

Ethnic Group	Posts											
	1		2		3		4		5		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
White	141	77.5	188	70.7	279	68.4	79	73.1	53	55.8	740	69.9
Black	22	12.1	43	16.2	89	21.8	14	13.0	27	28.4	195	18.4
American Indian	4	2.2	5	1.9	4	1.0	2	1.9	1	1.1	16	1.5
Spanish American	15	8.2	24	9.0	22	5.4	5	4.6	6	5.3	71	6.7
Other	0	0.0	3	1.1	8	2.0	6	5.6	5	5.3	22	2.1
Not Given	0	0.0	3	1.1	6	1.5	2	1.9	4	4.2	15	1.4
Total	182	100.0	266	100.0	408	100.0	108	100.0	95	100.0	1,059	100.0

Table A-4

Distribution of Survey Sample: Education by Post

Education	Posts											
	1		2		3		4		5		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
8th grade	1	0.5	1	0.4	5	1.2	0	0.0	0	0.0	7	0.7
8th grade	2	1.1	4	1.5	8	2.0	0	0.0	2	2.1	16	1.5
Some high school	27	14.8	52	19.5	53	13.0	12	11.1	4	4.2	148	14.0
High school graduate	88	48.4	142	53.4	200	49.0	43	39.8	43	45.3	516	48.7
Some college	44	24.2	51	19.2	109	26.7	37	34.3	34	35.8	275	26.0
College graduate	16	8.8	13	4.9	19	4.7	13	12.0	4	4.2	65	6.1
Graduate work	4	2.2	2	.8	9	2.2	3	2.8	6	6.3	24	2.3
Not given	0	0.0	1	0.4	5	1.2	0	0.0	2	2.1	8	0.8
Total	182	100.0	266	100.0	408	100.0	108	100.0	95	100.0	1,059	100.0

Appendix B

SURVEY QUESTIONNAIRE

Drug Use Inventory

(Project MODE II)

This questionnaire is being given as part of a research project being conducted by the Human Resources Research Organization, a civilian agency working under contract with the Department of the Army.

You will be asked to indicate the amount of alcohol and/or drugs, including those prescribed by a doctor, you have used during the last three days.

This Survey is Completely Anonymous. DO NOT WRITE YOUR NAME OR SOCIAL SECURITY NUMBER ANYWHERE ON THE QUESTIONNAIRE. We Have No Way of Knowing, and Do Not Want to Know, Who You Are.

HumRRO

HUMAN RESOURCES RESEARCH ORGANIZATION
300 North Washington Street
Alexandria, Virginia 22314

INSTRUCTIONS FOR COMPLETING THIS QUESTIONNAIRE

1. Circle the number indicating how many times you have used each drug **during the last three days**. (Count **each** drink, joint, pill, tab, etc., that you have taken within this three day period.)

2. If you have a prescription for the drug, check the box next to that drug.

3. Answer all items.

4. The questionnaire administrator will be glad to answer any questions you may have about this survey.

EXAMPLE

Alcohol

1.	Beer	0	1	2	3	4	5	(6-10)	11 or more	
2.	Wine	(0)	1	2	3	4	5	6-10	11 or more	
3.	Liquor	0	1	(2)	3	4	5	6-10	11 or more	

Stimulants (Speed, Ups)

4.	Bennies, Benzedrine	(0)	1	2	3	4	5	6-10	11 or more	☐
5.	Dexies, Dexedrine	0	1	(2)	3	4	5	6-10	11 or more	☐
6.	Methedrine, Meth, Crystal ..	(0)	1	2	3	4	5	6-10	11 or more	☒
7.	Pep pills	0	1	2	(3)	4	5	6-10	11 or more	☐

	Times Taken During Last Three Days								Check Box If Drug is Prescribed By a Doctor
Alcohol									
1. Beer	0	1	2	3	4	5	6-10	11 or more	
2. Wine	0	1	2	3	4	5	6-10	11 or more	
3. Liquor	0	1	2	3	4	5	6-10	11 or more	
Stimulants (Speed, Ups, Pep Pills)									
4. Bennies, Benzedrine	0	1	2	3	4	5	6-10	11 or more	☐
5. Dexies, Dexedrine	0	1	2	3	4	5	6-10	11 or more	☐
6. Methedrine, Meth, Crystal	0	1	2	3	4	5	6-10	11 or more	☐
7. Antidepressants	0	1	2	3	4	5	6-10	11 or more	☐
8. Cocaine, Coke, Snow	0	1	2	3	4	5	6-10	11 or more	
9. One of these or some other stimulant but not sure which	0	1	2	3	4	5	6-10	11 or more	☐
Depressants (Downers, Barbs, Tranquilizers, Sedatives)									
10. Methaqualone, Mandrax, Parest, Quaalude, Optimil, Sopor	0	1	2	3	4	5	6-10	11 or more	☐
11. Blue Heavens, Blue Birds, Amytal	0	1	2	3	4	5	6-10	11 or more	☐
12. Red & Blues, Tooies, Rainbows, Tuinal	0	1	2	3	4	5	6-10	11 or more	☐
13. Nemmies, Yellow Jackets, Nembutal	0	1	2	3	4	5	6-10	11 or more	☐
14. Purple Hearts, Phenos, Phenobarbital	0	1	2	3	4	5	6-10	11 or more	☐
15. Reds, Red Devils, Red Birds, Seccy, Seconal	0	1	2	3	4	5	6-10	11 or more	☐
16. Tranquilizers, Miltown, Librium, Valium	0	1	2	3	4	5	6-10	11 or more	☐
17. One of these or some other "downer" but not sure which	0	1	2	3	4	5	6-10	11 or more	☐

GO ON TO NEXT PAGE

	Times Taken During Last Three Days	Check Box If Drug is Prescribed By a Doctor
Cannabis Derivatives		
18. Marijuana, Pot, Grass	0 1 2 3 4 5 6-10 11 or more	
19. Hashish, Hash	0 1 2 3 4 5 6-10 11 or more	
20. THC, Number One	0 1 2 3 4 5 6-10 11 or more	
Psychedelic Drugs (Hallucinogens)		
21. LSD, Acid	0 1 2 3 4 5 6-10 11 or more	
22. Mescaline, Mesc, Peyote	0 1 2 3 4 5 6-10 11 or more	
23. Psilocybin, Magic Mushrooms	0 1 2 3 4 5 6-10 11 or more	
24. DMT	0 1 2 3 4 5 6-10 11 or more	
25. STP, DOM	0 1 2 3 4 5 6-10 11 or more	
26. PCP, Angel Dust, Killer Weed	0 1 2 3 4 5 6-10 11 or more	
27. MDA	0 1 2 3 4 5 6-10 11 or more	
28. One of these or some other hallucinogen but not sure which ..	0 1 2 3 4 5 6-10 11 or more	
Narcotics		
29. Heroin, H, Horse, Smack, Junk ..	0 1 2 3 4 5 6-10 11 or more	
30. Morphine	0 1 2 3 4 5 6-10 11 or more	☐
31. Codeine, Robe	0 1 2 3 4 5 6-10 11 or more	☐
32. Methadone, Dolly	0 1 2 3 4 5 6-10 11 or more	☐
33. Opium	0 1 2 3 4 5 6-10 11 or more	
34. One of these or some other narcotic but not sure which	0 1 2 3 4 5 6-10 11 or more	☐

GO ON TO NEXT PAGE

35. How many days ago were you told you would be urine tested today? _____

36. In the space provided below, tell us two things. First, tell us what you personally think of the urine testing program. Do you think that it is any good? Second, tell us whether you have ever done anything to make sure that you were not caught by a urine test? If so, please describe. (Please think these questions over and give sincere answers.)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(Use the back of this sheet if necessary)

37. What is your age? _____

38. What is your pay grade? E- ___ O- ___

39. What is the highest level of education you have completed? (check one)

_____ Less than 8th grade
_____ 8th grade
_____ Some high school
_____ High school graduate
_____ Some college
_____ College graduate
_____ Graduate work

40. What is your race?

_____ White
_____ Black
_____ American Indian
_____ Spanish American
_____ Other

41. How many years have you been in the Army? _____

When You Have Completed the Questionnaire, Fold it and Drop It in the Box at the Front of the Room

THANK YOU FOR YOUR HELP ON THIS SURVEY

Appendix C

FREQUENCY OF RESPONSE FOR EACH DRUG ITEM*

Item Number	Times Taken During Last Three Days								Number of Responses Indicating Use by Prescription
	0	1	2	3	4	5	6-10	11 or More	
1	440	101	106	98	50	50	100	114	0
2	859	70	35	32	17	7	20	19	0
3	810	58	46	38	26	28	23	30	0
4	1046	3	5	2	0	2	0	1	0
5	1054	1	2	2	0	0	0	0	1
6	1047	6	3	1	0	0	2	0	0
7	1052	1	0	1	2	1	0	2	2
8	1036	6	4	4	1	1	1	1	0
9	1036	8	9	3	2	0	1	0	5
10	1054	0	3	0	1	0	0	1	2
11	1059	0	0	0	0	0	0	0	0
12	1046	6	3	3	1	0	0	0	3
13	1056	2	1	0	0	0	0	0	0
14	1057	0	0	0	0	0	0	2	1
15	1048	2	2	5	0	0	0	2	0
16	1039	9	2	4	1	1	2	1	10
17	1045	4	4	3	1	1	1	0	5
18	788	36	34	32	21	23	32	93	0
19	1010	16	12	7	3	2	1	8	0
20	1032	13	9	1	0	1	2	1	0
21	1025	20	5	4	3	0	1	1	0
22	1053	2	2	0	0	2	0	0	0
23	1058	0	0	0	1	0	0	0	0
24	1059	0	0	0	0	0	0	0	0
25	1058	0	1	0	0	0	0	0	0
26	1048	3	1	2	0	0	0	5	0
27	1059	0	0	0	0	0	0	0	0
28	1057	2	0	0	0	0	0	0	0
29	1052	1	3	1	0	2	0	0	0
30	1059	0	0	0	0	0	0	0	0
31	1053	1	0	2	2	0	1	0	4
32	1058	0	1	0	0	0	0	0	0
33	1053	2	1	1	1	0	0	1	0
34	1058	0	0	0	0	0	1	0	1

*Based on findings from the Drug Use Inventory (Project MODE III).

Appendix D

SUPPLEMENTAL QUESTIONS TO THE QUESTIONNAIRE

A. Which of the following drugs can be detected by urinalysis? (Circle one answer)

a. Marijuana
b. Psychedelic
c. Barbiturates
d. Narcotics
e. Amphetamines
f. All the above
g. All but a
h. c, d, e, only
i. b, c, d, only

B. Have you ever decided not to use drugs because you were afraid of being caught by a "piss test"?

____ Yes
____ No
____ I never thought of using any drugs

Appendix E

LABORATORY URINALYSIS RESULTS FOR HumRRO STUDY

1. This form is to be used to record the urinalysis results from this installation for the dates _____ to _____, inclusive. It should be filled out by someone in the post urine testing facility as soon as the results for the specimens concerned are returned from the laboratory.

2. This information is required for a study being conducted by the Human Resources Research Organization (HumRRO) for the Department of the Army. It is of the utmost importance that the information be accurately recorded.

3. If you have any questions about this requirement, please contact _____ _____, the project officer for this study.

4. When you have recorded the results for each of the five days of the study, return the completed form to:

_____

_____

_____

TEST WEEK DATA

For Random Sample Urinalysis Tests

Daily Quota: _____ Post/Installation: _____

Day	1	2	3	4	5
Urinalysis Processing # Drawn					
# Excused					
# Tested					
# No-Shows 1st Day					
# No-Shows 2nd Day					
# No-Shows Finally Captured					
Total Tested					
Final Non-Captured No-Shows					
Lab Results # Amphetamines					
# Barbiturates					
# Morphine					
# Other					
# Combination					
Clinically Confirmed # Amphetamines					
# Barbiturates					
# Morphine					
# Other					
# Combination					

BY WEEK SUPPLEMENTAL DATA

For Random Sample Urinalysis Tests

Weekly Quota: _____ Post/Installation: _____

Week	Before Study				Test Week	After Study			
	4th	3rd	2nd	1st		1st	2nd	3rd	4th
Urinalysis Processing # Drawn									
# Excused									
# Tested									
# No-Shows 1st Day									
# No-Shows 2nd Day									
# No-Shows Finally Captured									
Total Tested									
Final Non-Captured No-Shows									
Lab Results # Amphetamines									
# Barbiturates									
# Morphine									
# Other									
# Combination									
Clinically Confirmed # Amphetamines									
# Barbiturates									
# Morphine									
# Other									
# Combination									

Appendix F

INTERVIEW GUIDE—QUESTIONS ON ADMINISTRATIVE PROCEDURE

I. GENERAL INFORMATION - To be Provided by Post ADCO

1. What is the total military population of this installation? _____

2. How many major units are located here? _____

3. What is the assigned daily urinalysis quota for this installation? _____

4. Approximately how many barbiturates, amphetamines, and narcotics are dispensed during an average month (or week) by medical facilities at this installation?

   Barbiturates _____ Amphetamines _____ Narcotics _____

5. What is the policy at this installation with respect to prescribing drugs with abuse potential (i.e., how freely are these drugs provided)?

   _____

   _____

   _____

   _____

   _____

6. What are the laboratory positive urinalysis rates for the four weeks prior to the study? (The same data will be needed for the four weeks subsequent to the study.)

Positive Rates Prior to Study	BARB	AMPH	NARC	Positive Rates After the Study	BARB	AMPH	NARC
1st wk.	%	%	%	1st wk.	%	%	%
2nd wk.	%	%	%	2nd wk.	%	%	%
3rd wk.	%	%	%	3rd wk.	%	%	%
4th wk.	%	%	%	4th wk.	%	%	%

II. NOTIFICATION AND FOLLOW-UP PROCEDURE - ADCO Interview

1. How are individuals selected for the urinalysis sample notified?

_____

_____

_____

_____

2. How many days prior to the testing day are they notified? _____

3. What is the average percentage of no-shows? _____

4. What is the procedure for following up no-shows?

_____

_____

_____

_____

_____

5. How are no-shows contacted? (Also, who contacts them?)

_____

_____

_____

_____

_____

6. What percentage of the no-shows are recovered through follow-up procedures? _____

7. What is the average time lapse before no-shows are finally tested? _____

III. SAMPLE SELECTION PROCEDURE - Interview with Individual who Actually Draws the Sample

1. How is the population sampled (by unit, or by individual), and is a random selection scheme from DA CIR 600-84 employed?

_____

_____

_____

_____

_____

2. Who actually draws the sample? (Rank and title)

_____

3. What security measures are taken with the roster containing names of individuals selected for the sample?

_____

_____

_____

4. Is the sampling procedure accomplished manually or by computer?

_____

IV. TESTING PROCEDURE - Interview with Officer or NCO with Direct Responsibility for Testing

1. How many samples (maximum) are collected at any one time?_____

2. Is each urine test directly observed?_____

3. Are specimens examined for possible dilution? If so, how?

_____

_____

_____

4. How are samples identified?_____

_____

5. Are specimens shipped to the processing laboratory on the day of collection?

_____

6. How are the specimens secured until shipment to the processing lab?

_____

_____

_____

V. CLINICAL EVALUATION PROCEDURE - Interview with Individual who Conducts the Clinical Evaluations

1. What is the clinical evaluation procedure used at this installation?

2. What is done to verify prescriptions brought in by detected drug users?

Appendix G

DRUG USE INVENTORY CODING SCHEME FOR CONTENT CATEGORIES (QUESTIONS 36A AND 36B)

Question 36A

0 = No response or unrelated response

1 = Program is GOOD (OK; Yes, because. . .; etc.)

2 = Program is GOOD CONDITIONALLY (e.g., "It's fine, but. . ."; "It would be great If. . ."; etc.)

3 = INDIFFERENT toward the program (e.g., "I don't mind. I don't use drugs anyway"; "No opinion"; etc.)

4 = Program is BAD - Moderately Worded (e.g., "Waste of time"; "Will do no good"; "I don't like it"; etc.)

5 = Program is BAD - Strongly Worded

6 = Program is UNCONSTITUTIONAL (e.g., "It deprives me of my rights"; "It's an invasion of my privacy"; etc.)

7 = Statement based on a GENERAL MISUNDERSTANDING of the procedure or purpose

Question 36B

0 = No response to part B

1 = Yes, no technique specified

2 = Flushed out system before urine test by drinking large quantity of liquids

3 = Used someone else's urine

4 = Used substance other than urine

5 = Didn't show up when scheduled to take the urine test

6 = Not able to urinate when asked

7 = Usually take drugs that show up on Thursday, Friday, or Saturday because in 2-3 days it is out of my system - never have urine tests on Friday or weekends.

8 = Being AWOL

9 = Fake prescription

Appendix H

URINE TESTING PROCEDURE AT FORT CARSON, COLORADO[1]

The urine testing program at Fort Carson is conducted in accordance with DA CIR 600-84, Random Selection Based Upon Equal Size Partitions. Testing is based on a military population of approximately 24,000 and a daily specimen quota of 110. Sampling is accomplished manually by the Noncommissioned Officer in Charge (NCOIC) of the Urine Team who draws the partitions to be tested from a list of all units on post (strength figures for these units are updated weekly). The population at risk is divided into 75 partitions.

The units to be tested on any given day are selected the day before testing. The battalion commander is notified on the afternoon the sample is drawn. However, he is reminded not to announce the test to the company commander until the following morning, one-half hour before testing is to be conducted.

The actual specimen collection at Fort Carson is treated as a unit responsibility. At least one member of the urine team is always present to provide necessary supplies, supervision, and assistance. The unit being tested provides the facility, one typist, one recording clerk, and one man grade E5 or higher as an observer. In order to maximize the number of people tested, testing is conducted following the morning formation.

The population at risk for any unit being tested includes all assigned and attached individuals accounted for on the morning report who are under 29 years of age. The unit is required to list every individual on a Fort Carson Form 1810, which is checked for accuracy by the Alcohol and Drug Control Office (ADCO). On this form all no-shows are indicated by reason for absence. No-shows are considered to be all those under age 29 who were assigned or attached on the morning report, but failed to provide a urine specimen on the day of testing. These may be broken into three categories:

Category 1 - All individuals under 29 years old who are *not* present for duty (but are accounted for) per the morning report. This includes AWOL, Confinement, Leave, TDY, Hospital, and special cases determined on an individual basis.

Category 2 - Individuals under 29 years old who are present for duty per the morning report, but are excused on the day of urine testing. This category includes Guard, CQ, pass, school, sick, taking a dependent to the hospital, appearance in court, and others determined on an individual basis.

Category 3 - All individuals under 29 years old who are present for duty per the morning report, are *not* excused from testing, but failed to provide a specimen. Make-up rosters listing all no-shows by names are kept on file in the Alcohol and Drug Control Office.

No-shows are followed up through the use of a procedure involving the random selection of individual unit make-up rosters. Make-up testing is generally conducted in the afternoon. Units selected for make-up testing are notified on the morning of the day of testing. Units are given a list of names of specific individuals to be tested. It is estimated that 90% of the no-shows are recovered for testing through this follow-up procedure. Most no-shows are tested within two weeks of the original test day. For the purposes of this study the normal random selection of make-ups for no-shows was deliberately biased to insure that the results would be available within the projected two-week period. The

[1] Included at the request of the ADCO.

procedure involved follow-up of each individual person who had been a no-show. The individual's unit was contacted and he was required to re-test. The average percentage of no-shows runs about 10 to 15%.[1]

All urine specimens are prepared for shipping to the processing laboratory immediately after collection. This involves a visual check of the specimens to insure that the quantity of urine is sufficient (50 ml) and that the substance is actually urine. Samples suspected of being impure are checked for specific gravity. After all checks have been made, specimens are packed and shipped to the processing laboratory on the day of collection. Specimens usually arrive at the California based processing laboratory on the day after shipment. Telephonic notification of laboratory negatives is usually received within two days and positives within about three days. A written report from the laboratory follows all telephonic lab reports.

All laboratory positives must be clinically confirmed. Units are notified of individuals whose specimens turn up positive. However, this notification is always followed by a statement to the effect that these men are not to be considered drug users until after a clinical confirmation. During the intake interview the counselor determines that the man:

(1) Is a confirmed positive, i.e., either he admits to being a drug user or it is obvious to the counselor that he is a drug user. In this event, the man is placed in the rehabilitation program where he will receive counseling and will be required to submit two urine specimens a week for eight weeks.

(2) Is a clinical negative, i.e., the man is taking the detected drug on a doctor's prescription. This is verified by reading the prescription from the bottle of medicine or by checking the man's medical records. If he was prescribed the drug by a civilian physician, that physician is contacted to verify the prescription. Clinical negatives are excused from further action.

(3) Does not necessarily fall in either of the first two categories, i.e., there is not enough evidence to make a determination. In this case, the man is placed on the surveillance program and will be required to provide three urine specimens a week for eight weeks. Subsequent positives during the surveillance period are not automatic cause for transfer to the rehabilitation program. If a lab positive during the period of surveillance is confirmed, though, it means transfer to the rehabilitation program.

[1] For the urinalysis results summary sheet requested as a part of HumRRO Project MODE II, the number of men eligible for urine testing will be all those accounted for on the morning report minus those who were selected to complete the MODE II survey questionnaire. No-shows should be broken out by the three categories mentioned above.

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